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FEBRUARY 1957

THE HAWK'S NEST, UNIVERSITY OF KANSAS, LAWRENCE (page 84)

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Among the Authors

Paul A. Walgren

PAUL A. WALGREN, controller of the University of Southern California, on page 26 presents, step by step, the handling of a complex operation—student registration. With mechanical equipment, U.S.C. now handles the whole registration procedure except the fee bill in one process, and Mr. Walgren anticipates the day when that final step too can be taken as the student progresses down the registration path. Before going to Southern California, Mr. Walgren was business manager of Oregon State College at Corvallis. In fact, he was associated with the Oregon system of higher education for more than 17 years.

Roger L. Walters

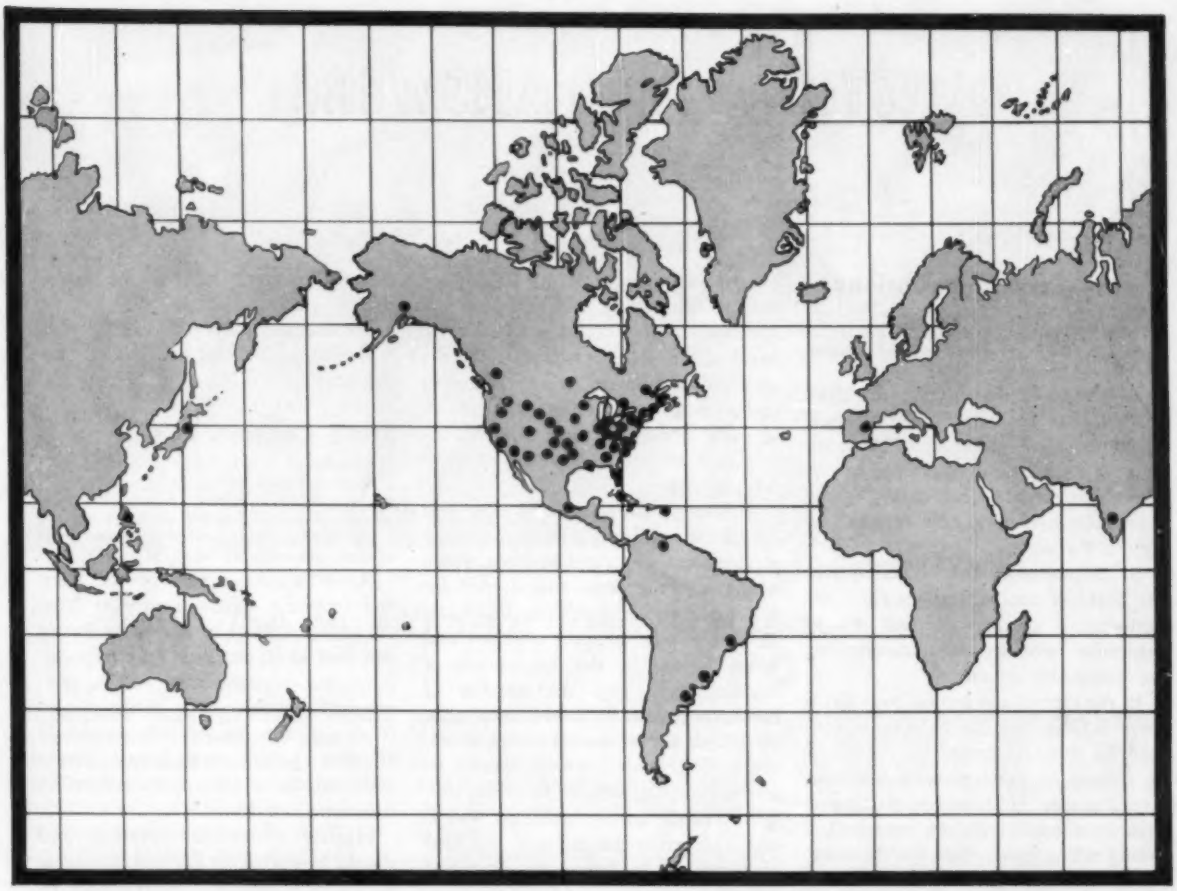
ROGER LOUIS WALTERS, coordinator of educational television at Idaho State College, Pocatello, has been directing pioneer and experimental work on closed-circuit television there for a little more than a year. Before that time he was an army instructor in communications at Fort Sill, Ark. He describes the interesting and somewhat unique TV setup at Idaho State on page 29. The whole community is involved. He reports two widely different types of hobbies, coin collecting and hiking.

Paul C. Hannum

College students and their automobiles are a major worry for many college administrators. Probably no campus faces a more critical parking situation than the Los Angeles campus of the University of California. On page 33, PAUL C. HANNUM, business manager, describes the system of parking regulations worked out there, and he also reports on types of parking facilities being made available for faculty, students and the general public. Mr. Hannum has been a member of the U.C.L.A. staff since 1947. From 1935 to 1946 he served on the staff of Culver Military Academy, Culver, Ind., and was managing director of the inn operated by the academy.

George E. Gere

GEORGE E. GERE, assistant controller of Carnegie Institute of Technology, points out the importance of an adequate system of internal auditing (*p.* 50). As colleges and universities become more complex in their fiscal operations, the rôle of the internal auditor enlarges and becomes more vital. Mr. Gere has been a member of the Carnegie Institute of Technology staff since 1945. He served for 15 years in the business office of the University of Michigan as assistant chief accountant and cashier, and from 1927 to 1930 was junior accountant in the business office of the Univerity of Illinois. . . . S. LEE BURNS, assistant director of residence halls at the University of Wisconsin, is handling the major research and planning for a new residence hall construction program. He was director of residence halls at Wisconsin for many years, but for reasons of health resigned to assume his present position, which, except within recent months, does not require full-time around-the-clock activity. On page 42, he describes the two new low-cost cooperatives.



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QUESTIONS AND ANSWERS

Survey Recommendations

Question: What are the chief road-blocks in putting institutional survey recommendations into effect? How can some of these be avoided or overcome?—J.C., Iowa.

ANSWER: In my opinion the chief road-blocks in putting institutional survey recommendations into effect are two: (1) Certain recommendations are impracticable and/or (2) the chief administrative officers lack intestinal fortitude.

In the case of the first objection only the board of control and the chief administrative officer can and should determine whether recommendations are practicable or not.

In the case of the second road-block there is little that can be done to correct the situation except for the board of control to make some administrative changes. If, however, the board of control itself lacks the courage for taking action that is best for the institution as a whole, irrespective of the individuals personally concerned, then the case is hopeless for the time being.

Problems seldom arise in putting minor recommendations into effect because improvement of our administrative technics and procedures is constantly going on in any well organized institution, and people are accustomed to changes. When certain recommendations require major shifts in key personnel and/or realignments of responsibilities, then the second point becomes of utmost importance. —WILLIAM O. NICHOLLS, *treasurer, American University.*

Plan for Expansion

Question: What standards and guides are helpful in developing a long-range plan for expansion of campus and facilities?—L.R., S.C.

ANSWER: The development of a long-range plan for the expansion of the campus and facilities for any educational institution is such an individualized problem that no standards or guides have value. The only approach to the problem seems to be through a determination by the institution of the probable size of the student body to be planned for and of the various programs to be taught, such as liberal arts, technical and professional. It then becomes necessary to break down the physical facilities required, that is, so many classrooms and so many laboratories, and the size of each. These can then be added up to give a net square foot area of institutional space.

To this should be added 50 per cent for offices, corridors, storerooms, stairs, service areas, shops and so forth, which would give the gross area needed for direct educational purposes. This gives an over-all total of space required and, when divided by the desired size of building, will give the number of buildings required. To this total must be added an estimate for library requirements, student union, special research facilities, athletic facilities, dormitory needs, service buildings, and so on. This gives the number and kind of buildings to house the estimated college population.

As far as campus area is concerned, there are many variables as to type of institutions, *i.e.* urban, rural and all possible variations in between. The needs of institutions of varying programs are diverse so that no general guides can be found. However, few, if any, colleges and universities find that they have enough land for campus expansion.

In view of the tremendous expansion in college population and the projected future growth of higher education, it might be well to double again presently estimated needs as calculated here.—W. P. WETZEL, *director of physical plant, Temple University.*

If you have a question on business or departmental administration that you would like to have answered, send your query to COLLEGE and UNIVERSITY BUSINESS, 919 North Michigan Avenue, Chicago 11, Ill. Questions will be forwarded to leaders in appropriate college and university fields for authoritative replies. Answers will be published in forthcoming issues. No answers will be handled through correspondence.

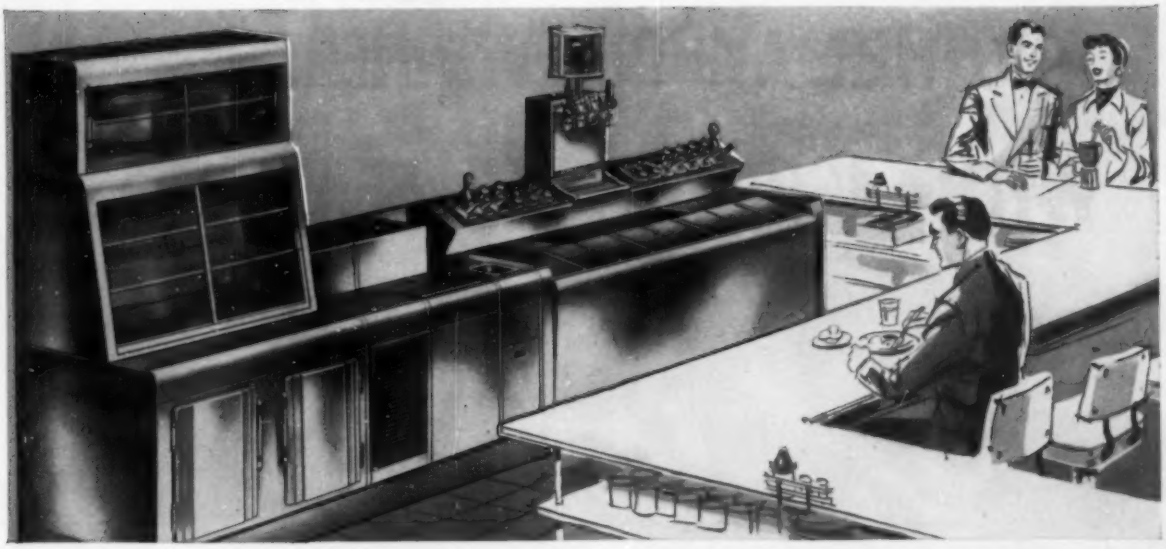
State Controls

Question: What fundamental political and educational principles are in conflict in the controls of higher education by state officials responsible to the governor and the legislature for the control of all departments of state government?—A.T., Minn.

ANSWER: As a part of the state, and receiving its main support from the state, a college or university should and does in all instances have responsibility and accountability to the government and through it to the public. It should also be subject, as should all other agencies, to such basic checks and controls as are appropriate to its functions and status.

Higher education deserves and should have a highly autonomous status in the governmental organization of which it is a part, be it state or municipal or federal. In brief, the reasons are its difference in objectives, its breadth of public responsibility, the nature of its management, its professional and technical nature, and its nonpolitical character. These characteristics are more or less in contrast to most other departments of government.

By principle and by character of its organization and purposes, higher education deserves and should have a highly autonomous status in state and municipal organization. With such autonomy should go responsibility and accountability. Responsibility requires methods of control within the organization as an integral part of management. When these are adequately set up, with proper means of financial reporting and independent audit, continuous external controls are not only unnecessary but are undesirable both from the standpoint of the institution and in the public interest. Illinois is one of a number of states that have gone far in following this principle. —LLOYD MOREY, *auditor of the state of Illinois.*



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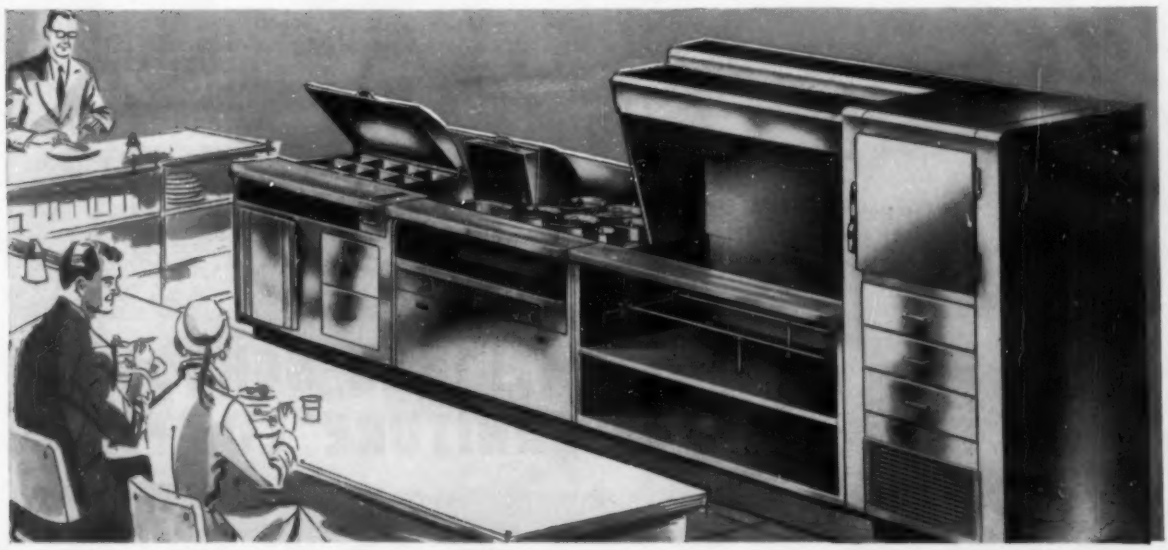

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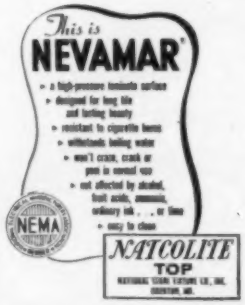

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Within the limits of the situation, every college store should merit the name of "bookstore" by doing an adequate job on general books. Nothing will keep the faculty more content.

The two major problems in bookstore operation are selection of a manager and establishment of merchandising controls.

Selecting a manager is somewhat dependent on the size of the store. Large stores whose earnings warrant adequate compensation can advance department managers, obtain personnel from other college stores, or obtain assistance from the general retail field, such as the department stores. In the smaller colleges the problem is more difficult because the manager must have additional abilities. Probably he will supervise the mimeograph department or the post office, or some other service. Only in this way can adequate compensation be justified.

Total bookstore salaries, depending on the location, should range from 12 to 15 per cent of gross sales. Of this total, at least 6 per cent should be allocated as the manager's salary. If the percentage of salaries based on the gross business is lower than 12 or 15 per cent, it indicates that the bookstore staff is underpaid. Incentive plans, based on profits, work to the benefit of all concerned.

Let us assume that a competent manager has been hired. The chief administrator's next responsibility is to insist that the manager keep adequate records. The biggest single problem of the college store, without regard to its size, is an excessive inventory of textbooks. Adequate cumulative records of books used in the various courses must be kept. Unsold textbooks must be returned to the publishers. As a corollary, the inventorying of books not in use in the curriculum at full purchase value is a dangerous policy.

A new manager is likely to find a large stock of obsolete, worthless books carried at full cost prices. A textbook not in current use on the campus should be assumed valueless and should be carried on the inventory at no more than the value obtainable from a wholesaler. Another good rule is to carry all books that have been in stock more than two years at no value.

There will be merchandise other than books in the store, and it is important that the retail method of inventory control be used with these items. This method permits the rapid determination of shortages and the computation of a financial statement without taking a physical count.

More than 25 per cent of the members of the National Association of College Stores have adopted self-service with check-out methods of retailing in the past few years. Faster service and more sales with less effort have been the result.

Proper management, provided with adequate facilities, will ensure a bookstore that will provide the implements of a college education. Every campus deserves such a store.

LOOKING FORWARD

Interpreting Higher Education

IN RECENT YEARS HIGHER EDUCATION HAS BEEN THE beneficiary of a "good press." Newspapers and magazines have devoted extensive space to reporting the problems of higher education, with the result that the general public is becoming aware of the challenges and needs facing colleges and universities.

Through the good offices of the Advertising Council of America and the Council for Financial Aid to Education, the entire nation will soon be exposed to a program of educational interpretation and promotion of higher education. Plans call for a scheduling in April of newspaper advertisements, billboard displays, and bus and streetcar cards that will graphically present to the public the needs of higher education and the contributions that colleges and universities can make to society.

Commitments already scheduled for newspapers, magazines, radio and television have a commercial value in excess of $3 million. Special kits of suggested advertisements will be released to more than 6000 daily and weekly newspapers, and special scripts and continuity will be furnished to radio and television stations.

In order to profit most effectively from this promotional and interpretive effort, it would seem wise for college presidents to meet with fellow presidents in the immediate vicinity so as to avoid making independent contacts with local newspaper offices and radio stations. Newspaper and radio executives might be so swamped with individual institutional approaches that they would be inclined to discard the whole idea.

This cooperative venture of the Council for Financial Aid to Education and the Advertising Council of America may be continued over a two-year period, with special emphasis in April and November of this year and next.

While higher education won't be interpreted or "sold" by pitch men, the college executive who neglects to take advantage of the communication media now being offered by business and industry would be shortsighted. It is an uncommon public relations opportunity.

Getting Too Extravagant?

IT IS COMMONPLACE THESE DAYS TO READ THAT another college has announced an increase in tuition fees and in board and room rates. The inevitable question is: "When is it going to end, or are we just on the midpoint of an upward spiral?"

The question cannot be answered with finality. In some institutions a student's education at low cost has been possible because of a professor's sacrifice in salary. On the other hand, some university administrators may have provided residence, food service, and college union facilities that are a little elaborate. Students don't have to be housed in country club surroundings, nor is it necessary to provide leisure time areas that only wealthy homes can duplicate.

Monastic living and comfort loving and exuberant modern youth may be incompatible, but some hint of austerity in their surroundings might have a sobering influence on students. This sobering effect might be reflected in more substantial and significant academic performance—an objective worth working toward.

As college administrators plan future buildings, would it not be good sense to raise some questions as to how handsome a residence hall has to be or how many extras need be included in the plans for the union building? Eliminating frills wouldn't cheapen the education being offered, and it might reduce the cost of it.

The Executive Reader

ONE OF THE BEST WAYS FOR AN EXECUTIVE TO STAY on top of his job is to read, provided he reads constructively. The American Management Association has reported on the reading habits of industrial and business executives as the result of a survey conducted by that organization. This report may interest college and university administrators.

The top-flight business executive spends four hours a day, in the office, and one hour a day, at home, reading business reports and correspondence, books, newsletters and business magazines. The proportion of book readers among executives covered in the survey is higher than is the proportion among college or high school graduates in general. These executives read from four to six business books a year.

"The executive emerges from the survey as an intelligent reader, a harassed reader—above all, a constant reader," according to conclusions reported by Lydia Strong in an article on the survey in the January issue of the *Management Review*. "His tastes, as reflected in his nonbusiness reading, are above average; on and off the job he is seeking for fact, point and content."

One wonders if the reading pattern of college and university executives would rate as high. Business executives seem to find intelligent reading necessary; that weakens the alibi of some university administrators: "I don't have time for reading." Business leaders find time.

Are surveys justifiable?

Have they proved helpful?

Are they worth the cost?

MANAGEMENT SURVEYS

PAUL B. GILLEN

Director, Institutional Consulting Associates, Englewood, N.J.

THE COLLEGE OR UNIVERSITY BUSINESS manager is a key official on any campus. As much as any campus official, and certainly more than a good many officials, he helps shape the destinies of higher education. There can be little doubt that he is an educator who helps strike the balance of institutional decision making in cold, hard terms. In concert with his president, he helps make decisions that bring idealism and realism together in terms of the availability of resources and also in terms of educational programs and activities and the wherewithal to support them. While it may be true, as in every profession, that some business officers are too conservative, many have been instrumental in helping their institutions avoid serious mistakes by questioning the relative merits of proposed programs for which financial support is sought.

Like the president, the business manager must at all times have in mind major institutional purposes and priorities and must weigh requests accordingly. It seems inescapable, therefore, that the business manager must be able, conscientious, well informed, and highly professional. He should seek every opportunity not only to improve his institution but also to improve himself.

The survey technic has a definite rôle and contribution in the whole pattern of professionalization. The kind of survey and the attitudes involved in it have much to do with the type and size of contribution it can produce. Moreover, its timing and auspices, plans, procedures and means of communicating aims, goals and progress have much to do with its worth to an institution.

INSTITUTIONAL SURVEYS NOT NEW

Institutional surveys are by no means new. Reports of numerous comprehensive surveys were written many years ago. For the most part, the earlier surveys were concerned with evaluating educational programs, and they made strong contributions to forging the educational futures of many colleges and universities. Many institutions continue to study their educational offerings and programs.

In recent years another type of survey, generally known as a management survey, based on evaluation of the use of resources and with financial structure a central emphasis has become popular. Many of these management surveys, however, have not been related to examining the educational program, but some institutions are currently having a complete review of educational offerings and administration, all in one planned survey. The administrative review portion may or may not have outside professionals involved, depending on the wishes of the board and the president.

The question of how well an institution is administered can be just as important, if indeed not more so, in some places, than its educational offerings. Running an institution involves policy formulation and decision making with regard to the numerous functions encompassed by the purposes and goals commonly held. At its very heart, even if we assume good organization and proper policies, administration is based upon effective handling of myriads of details of many kinds. These details in turn are found in acts, procedures, records, and so on. The adequate handling of these details in terms of functions helps determine whether an administration is effective. While there are many details and procedures on the strictly academic side of an institution, the number and meaning of details on the business side are voluminous.

Some years ago, American business and industry, in trying to keep pace with the increasing demand for its service and products, found it highly desirable to sponsor research to learn how to handle more effectively all the details necessary for its progress. The whole recent emphasis upon science in business management is the result. It is hardly necessary to mention the contribution of the Harvard School of Business, the Wharton School of Finance, and numerous other specialty schools as evidence of the meaning of research in business administration. These centers of business and financial thinking, together with numerous professional associations in banking, accounting and controllership, insurance,

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From a paper presented at the annual meeting of the Southern Association of College and University Business Officers, Memphis, Tenn., 1956.

real estate management and other fields, have made significant advances to thinking in effective business management.

More recently, some of those who had experienced the beneficial results of business management surveys in their businesses or industries came to feel that institutions of which they were trustees or board members could profit from the use of similar surveys. As a result, some 75 or more colleges and universities to date have benefited from such study technics. Many of these reviews were not confined to accounting, grass cutting, painting and cleaning of buildings but included topics such as over-all institutional policy, organization, educational costs, effectiveness of principal officers, development, public relations, the library, admissions and similar subjects usually regarded as academic.

IMPORTANT OBSERVATIONS

A few general observations about the use of surveys seem important. At the outset, it should be said that no survey can be a panacea for an institution nor can it hope to rebuild an administration whose key personnel is lethargic and retrogressive. Survey consultants do not and cannot know all the answers to every problem, although many of them have a surprising background of facts and knowledge about many activities. What is more important, however, they do know good organization and effective administration, and they have excellent ability to appraise personnel performance. Most of them have a keen analytical ability.

There has not been a survey in which all recommendations have been adopted but, as a rule, between 60 and 75 per cent of survey recommendations are adopted.

Several ways in which an institution can profitably use management survey technics are:

1. The inside survey, wherein the board or president appoints a group of institutional personnel to make a careful review and report its findings and conclusions.

2. The outside survey, wherein the board or president contracts with a consulting firm to supply its personnel to visit regularly or live on or near the campus to conduct a professional survey and prepare a report.

3. The joint survey, wherein the board or president appoints a group of institutional personnel to work with, and be advised by, an outside consultant who gives concentrated periods of time to close cooperation with the survey group. The former prepares a report with the general advice of the consultant.

Each of these methods has its merits and which one is used at a given time depends upon circumstances within the institution. Many institutions have used the outside survey with good results. A few are experimenting with the joint survey with considerable promise for their institutions.

INSIDE SURVEYS

The inside survey has the advantages that those who do the job are likely to be senior, seasoned people who recognize that their college or university has some problems worthy of attack and hoped for solution. Some of the difficulties with the inside survey are:

1. The members are likely to know too little about adequate analytical methods as applied to management and also are likely to shy away from mass collection and study of details, which is at the heart of the management study method.

2. There is danger that too much allowance will be made for "personalities" and for the value of the so-called time tested methods and procedures which the institution has used for many years.

3. The value judgments of one or two on the committee may have too much weight in the conclusions and recommendations.

4. Sensitive areas are not likely to receive searching analysis.

5. Members may lack the necessary comparative information about other institutions and also may lack basic information of a yardstick nature by which performance can be judged.

These are not insuperable disadvantages, however, and the self-survey method should not be discarded as a possibility, especially by institutions that are large enough to call upon faculty members who are specialists. Some colleges have been able to make extensive improvements by use of the self-survey method. Since it is difficult to be completely objective about anything, it is especially so about the organization with which one is associated.

The outside survey has numerous advantages. These include the disregarding of vested interests, of empire building, of "personalities," and the like. No areas are particularly sensitive to the professional surveyor, nor is he likely to give much weight to the value judgments of various persons who have something to conceal or protect.

Institutional politics means little to him. His main concern is for the institution per se. Of course, he is aware of, and concerned with, whatever "growing edges" of administration he can discover and is quick to give approval to good practices and ideas. Moreover, he brings a wide background of studies in administration and knowledge of the data of administration generally and has much better than average analytical abilities. He is likely to be quite expert at observation and at ferreting out the necessary facts with a minimum of lost motion and interruption.

There are also some disadvantages in the use of an outside survey staff. While it is generally recognized that principles of good organization and administration are everywhere the same, too often the assumption is made that the methods, technics and procedures currently employed in the business world to implement these principles can be taken over without adaptation by colleges and universities.

There are many elements in an educational institution, however, which are very different from the business and industrial world and which require that principles be applied in ways that are fitting. Sometimes professional consultants handle their assignments so rapidly that the study of certain areas of a college is neither comprehensive nor intensive enough. Professional teams often know little about educational philosophy, aims or programs. They assume that knowledge of the business world is sufficient for judging the activities of an educational institution, and yet outside teams survey not only the business activities but also such academic activities as the library, admissions, registration, teaching costs, and use of faculty time.

FEW WITH EDUCATIONAL EXPERIENCE

Until quite recently very few staff members of professional consulting agencies had any professional educational experience. One or two agencies have added men with educational experience. Another agency is committed to the principle that any aspect of an educational institution is best studied by persons with a combination of educational and business experience.

Finally, outside teams often fail to recognize that institutions are by nature slow moving and that a substantial part of their stability comes about because they are slow to change. Institutions of higher education operate within an ideational world which permeates all that an institution does and affects all levels of personnel. This condition makes it difficult to judge fairly the performance of the nonacademic employes who were never exposed to the same kind of work requirements or remuneration found in industrial plants and commercial offices. Taking due account of the advantages and disadvantages, we find that some significant American colleges and universities have benefited greatly from the outside survey.

ADVANTAGES OF JOINT SURVEY

The newest of the survey technics—the joint survey—has been tried in about a half dozen institutions and has met with good results. The joint survey brings together both inside and outside experience, knowledge and ability in one team.

Seven advantages of the joint survey are:

1. An almost continuous fact-finding, analysis and discussion forum is available.

2. The inside members collectively know their institution quite well and know generally where to find what facts, what previous studies have been made, and the history of various attempts at making improvements.

3. Members of the institution, under the guidance of a well qualified outsider, make the proposals and prepare the first draft of the report.

4. The know-how of thinking and procedures of making suitable study of administrative operations and problems is built into the team members, and much of the knowledge acquired about the institution is left behind in the institution among the team members.

5. More effort is likely to be made to implement the proposals.

6. Joint surveys are likely to be cheaper because they require fewer expensive outside workers and a less costly setup, and also because faculty members involved are on the regular institutional payroll.

7. Joint surveys will contain more detailed information and recommendations, and these are likely to be more directly related to specific problems.

POSSIBLE DISADVANTAGES

Some possible disadvantages to the joint survey include:

1. Having a committee composed of all faculty members, as sometimes happens, comprises a situation that is loaded in favor of faculty concepts and value judgments and usually gives too little consideration to administrative experience.

2. Having too few inside survey staff members, and these on a part-time rather than on a full-time basis, is likely to confuse and prolong the process.

3. Many good top administrative ideas can be lost through refusal or reluctance to hold periodic conferences with the president, vice president or others on the progress of the survey and interim indications.

4. Sometimes a committee which either is not adequately used or refuses to invest the necessary time or energy in a systematic detailed study program tends toward generalizing on its experience.

5. The minds and attention of committee members are occasionally diverted from full attention to the survey because they tend to look at problems in terms of institutional politics.

6. Committee members may shy away from proper study of assigned areas through fear of later bad relationships or "reprisals."

7. Committee members tend to argue against the facts, implications and proposals turned up in group conferences when they either throw an unfavorable light on the activities they represent or suggest significant changes in their operations.

Not all of these disadvantages are likely to be present in any one joint survey, but some of them may well be unless the president and the outside consultant have made adequate preplanning and keep in close touch with the progress of the work.

Are surveys justifiable? Have they proved helpful? Are they worth the cost? These are fair questions that have received positive answers from almost all institutions that have used survey technics in one or another of their forms. The survey provides a means whereby an institution can look objectively at itself to see how efficiently it is operating and where organizational and administrative machinery can be modified to make it operate more effectively and with less friction. When recommendations are worked out cooperatively, are understood by all concerned, and are democratically accepted, they have always been helpful. Experience has shown that in most cases budgets have been clarified and made more realistic and savings have been effected which more than cover the cost of the survey. The type of economies that have been experienced or may be expected from the use of survey technics in studies of institutions have been listed by Irving Salomon in his recent series in COLLEGE AND UNIVERSITY BUSINESS.*

A further value of a survey is that it provides the circumstances in which all persons involved in an institution rethink what they are doing and whether they are doing it effectively. This simultaneous cooperative activity is not only stimulating but is also morale building. All the aid a survey brings is not apparent in the first few months after its completion. Surveys like other professional tools or instruments need to be used at the proper time in the proper way. When they are undertaken with the intention of making good institutions better and of serving the best long-run interests of the institution, and when they gain the cooperation of all concerned and are convincing in the fairness and logic of their conclusions, they can well add a dimension of vigor and vitality to institutional life.

*Salomon, Irving: Management Surveys. Coll. & Univ. Bus. 19:27, 42, 30, 42, 37 (August-December) 1955.

How to build an effective food service budget either for contract feeding or for public cafeteria or canteen service will be told next month by T. H. Rehder, director of dormitories and food service, University of Iowa.

The Mechanics of Registering Students

PAUL A. WALGREN
Controller, University of Southern California, Los Angeles

ONE OF THE MAJOR PROBLEMS OF clerical processing at our university is student registration. The problem involves the preparation of approximately 100,000 class cards a semester.

Each class card must contain the following information: (1) student's name; (2) student's permanent identification number; (3) receipt number of fee bill issued student when he paid his tuition and fees; (4) class number; (5) course number; (6) course title; (7) unit or credit hour value of class; (8) amount of tuition charged for class, and (9) total number of units included in student's registration.

During the first year of the operation of our mechanical equipment, the class cards were produced by hand-punching part of the information from the student's official program and by reproducing part of the information from the student's statistical card and from master class cards.

This put a tremendous load on our key punch section. In addition to key-punching information we verified the key punching. In effect, therefore, our key punch section had to punch the equivalent of 200,000 class cards a semester, or approximately one-half million cards a year, including summer sessions. The load on the key punch section was magnified because of the fact that the cards had to be prepared within a short period of time. Obviously our problem was to reduce or to eliminate the key punch time at registration.

Our problem in this respect varies from that of most schools because of our method of charging tuition. The tuition of most of our students is computed from their registration. Tuition is billed at a rate per unit or credit hour of instruction. There is a variation in rates for graduate courses as contrasted to undergraduate courses. There is also a variation in undergraduate course rates as between full-time and part-time students. Under this system it is impossible to establish a fixed rate for each class that would be applicable to all students. The only exception is that all graduate courses have the same rate per unit of instruction.

AUDITS EACH REGISTRATION

Because of this tuition plan, and for other reasons, the University of Southern California makes an audit of each student's registration. To accomplish this with punched card equipment, it is necessary that each class card contain a reference to the student's original fee bill or receipt and information to classify the student as full time or part time. This is done through the fee bill number and through the total number of units included in the student's registration.

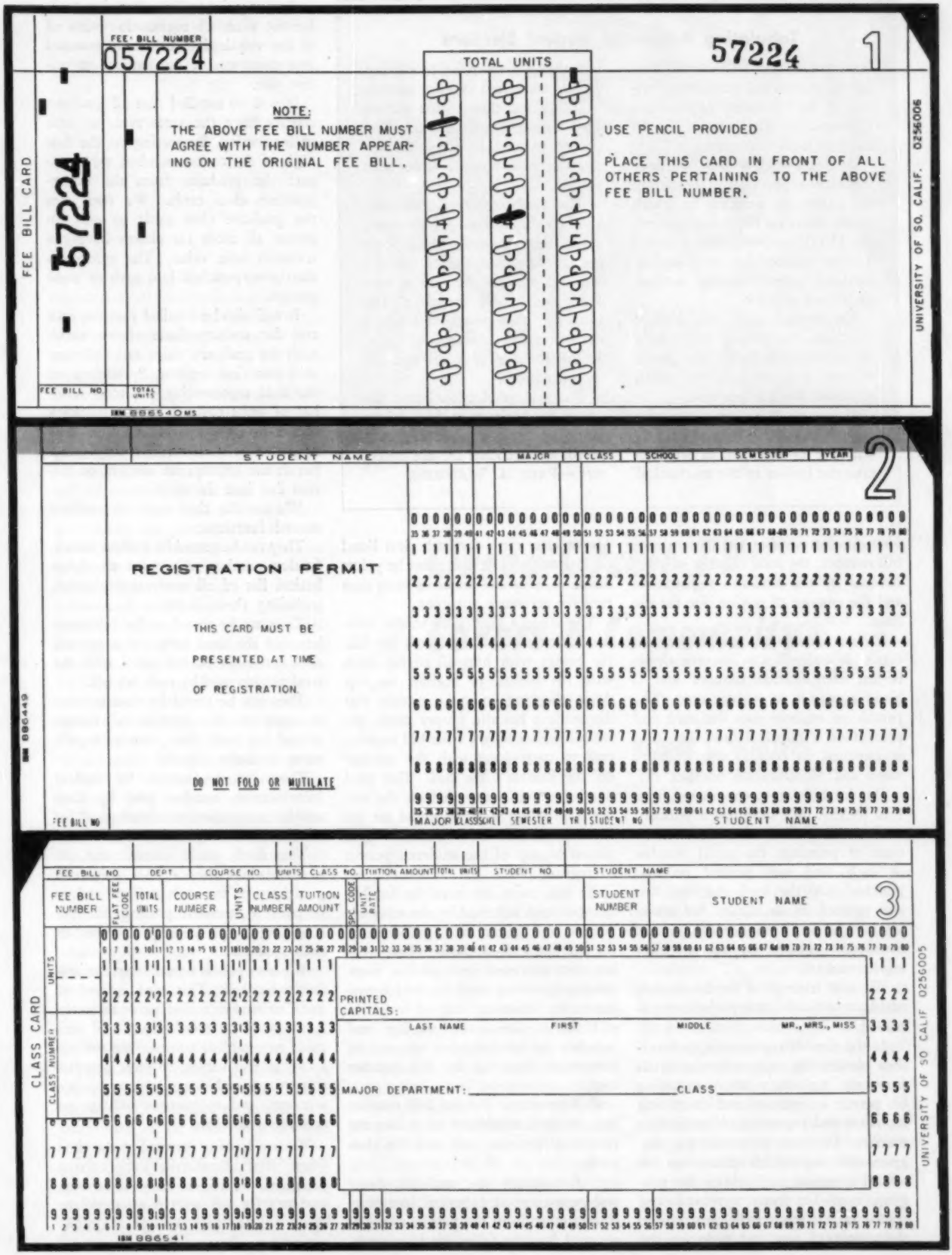
The common denominator for all documents related to a student's registration for a given semester is the number printed on his fee bill.

Several members of our business office staff usually get together for lunch. Over our hamburgers we discuss and come up with solutions to many problems, including some the United Nations finds difficult. One day we were discussing the class card problem. Somebody said: "Now if we could only do such and such, we wouldn't have to punch any cards at the time of registration." That started a chain reaction, and before we returned to the office we had a basic plan that has been developed to accomplish the objective.

Basically the plan involves the use of prepunched cards and the utilization of the mark sensing device on our document originating machine. The prepunched cards include class cards, the student's permit to register card, and a fee bill number card.

A master class card is punched for each class to be offered by the university. This card contains all of the information related to the class, including the number of students that can be accommodated in the class. We then run the master class cards through the collator and, using the card counting device, we produce a deck of cards containing a master class card followed by the required number of blank class cards followed by the next master class card and so on.

We then process the cards through the document originating machine to reproduce the required information from each master class card into the following blank cards. At the same time we prepare a re-order card for each class. We end-print the class number and unit value of the class for ready identification. The class cards are then put into specially designed bins and sent to the registration area. They contain all of the required information except the student's name, the student's permanent alphabetic



FEE BILL CARD

FEE BILL NUMBER 057224

57224 1

TOTAL UNITS

NOTE:
THE ABOVE FEE BILL NUMBER MUST AGREE WITH THE NUMBER APPEARING ON THE ORIGINAL FEE BILL.

USE PENCIL PROVIDED

PLACE THIS CARD IN FRONT OF ALL OTHERS PERTAINING TO THE ABOVE FEE BILL NUMBER.

UNIVERSITY OF SO. CALIF. 0256006

FEE BILL NO. 57224

TOTAL UNITS

IBM 886540MS

STUDENT NAME | MAJOR | CLASS | SCHOOL | SEMESTER | YEAR 2

REGISTRATION PERMIT

THIS CARD MUST BE PRESENTED AT TIME OF REGISTRATION.

DO NOT FOLD OR MUTILATE

IBM 886449

FEE BILL NO

MAJOR | CLASS | SEMESTER | YR | STUDENT NO | STUDENT NAME

FEE BILL NO. | DEPT. | COURSE NO. | UNITS | CLASS NO. | TUITION AMOUNT | TOTAL UNITS | STUDENT NO. | STUDENT NAME

CLASS CARD

FEE BILL NUMBER | FLAT FEE CODE | TOTAL UNITS | COURSE NUMBER | UNITS | CLASS NUMBER | TUITION AMOUNT | SPEC. CODE | UNIT RATE | STUDENT NUMBER | STUDENT NAME 3

UNITS

CLASS NUMBER

PRINTED CAPITALS:

LAST NAME | FIRST | MIDDLE | MR., MRS., MISS

MAJOR DEPARTMENT: _____ CLASS _____

UNIVERSITY OF SO CALIF 0256005

IBM 886541

Tabulating Results of Student Elections

AN EXTRACURRICULAR FUNCTION of the mechanical accounting system at the University of Southern California is tabulation of the results of student elections.

Students work with the business machine supervisor in designing the ballots for printing on punch cards. After the ballots are printed, the U.S.C. business office punches a serial number into each card to establish control on the number of ballots printed.

On election day each student goes into the voting booth with the appropriate ballot and marks it with a heavy graphite pencil provided for the purpose.

When the polls are closed, the student election board and a representative of the dean of students take the ballots to the mechanical accounting system for processing. Ballots are sorted to serial number order and put through the collator for a number sequence check. This proves to any doubting Thomas that the ballot boxes have not been stuffed.

The cards are then processed through the university's document originating machine, which reads the graphite markings on the ballots and punches the card to conform with those markings. The cards are then processed through the sorter and tabulator to arrive at the number of votes cast for each candidate.

The student election board observes the entire procedure. Many hours of tedious labor are thus saved, and recounts are not necessary.—PAUL A. WALGREN.

identification number, the student's fee bill number, the total number of units covered by the student's registration, and the amount of tuition due for the class.

Each student admitted to the university is assigned a permanent alphabetical identification number and is given a permit to register card. The permit to register was designed and printed on a punched card. The card is punched to contain the student's name and identification number.

Our fee bills are prenumbered from 1 to 99,999. We designed a punched card as a fee bill number card. At the time of printing, the serial number of each card was printed on and punched into the card. An area was also printed on each card for mark-sensing the total number of units of instruction covered by the student's registration.

We now have all of the basic cards necessary to record each student's registration.

At the time of registration, each student obtains his registration materials from the registrar's office, including his permit to register card containing his name and permanent identification number. He then works out his program and records his classes on his official program card. After his program card has been approved and signed by his adviser, he proceeds to the class card area and picks up the proper class cards for each class listed on his program. At this point he prints his name, year and major on each class card for reference purposes.

The student then goes to the business office area to obtain his fee bill. He brings with him all of his cards with his permit to register on top. After checking to make certain that the student has the proper cards, the fee bill writer selects a fee bill number card to correspond with the number on the student's fee bill. The total number of units recorded on the student's program is mark-sensed on the fee bill number card, which is then placed on top of the student's permit to register card.

At this point, we have the fee bill number card followed by the student's permit to register card, followed by the student's class cards. The cards are then processed through the document originating machine, which performs the following:

1. Reads the mark sensing and punches the total number of units of instruction into the fee bill number card.

2. Reproduces the fee bill number and the total number of units into the permit to register card and the class cards.

3. Reproduces the student's name and permanent alphabetical identification number from the permit to register card into the following class cards.

At this point we have our class cards for the student's registration with all of the required information punched into them except the amount of tuition due.

It will be recalled that all graduate courses have the same rate per unit of instruction. By sorting on the first digit of the course number, we segregate the graduate from the undergraduate class cards. We then sort the graduate class cards to pull together all cards for classes having a common unit value. The tuition is then gang-punched into each of these groups.

It will also be recalled that the unit rate for undergraduate classes varies with the student's status as a full-time or a part-time student. By sorting on the field representing the total number of units covered by the student's registration, we separate the class cards of part-time students. We then gang-punch the appropriate amount of tuition due into the cards.

We use the class cards to perform several functions:

They can be sorted by student identification number to prepare an alphabetical list of all students registered, including their classes.

They can be sorted by fee bill number, and the total tuition due per the class cards can be compared with the total tuition paid by each fee bill.

They can be sorted by class number to compute the amount of tuition earned for each class, course, department or major school.

They can be sorted by student identification number and by class number to prepare an alphabetical list of all students registered in each class.

The final grade earned can be punched into the card to prepare a grade report for each student and to prepare a transfer posting list for recording on the permanent record of each student.

We also punch a card from the student's fee bill. This card is used to audit to student's class cards to establish control on total tuition and fees paid, to establish controls on various accounts receivables, to clear scholarship awards and charge the appropriate accounts, and to prepare billings on accounts receivable.

We are looking forward to the time when, after eliminating some current problems, we can actually write each student's fee bill with our equipment as the student goes through the registration procedure.

Senior members of the TV technicians' course at Idaho State College operating the control panel.

Closed-Circuit TV Covers a Community

ROGER L. WALTERS
Television Coordinator, Idaho State College, Pocatello

DURING THE PAST FEW YEARS administrators of many educational institutions have been investigating some form of television installation to provide professional training for students planning careers in television. Even more recently educators have begun to think of television among possible solutions to aspects of two of the biggest problems facing American education: lack of teaching space and lack of qualified instructors.

Already a number of colleges and universities are participating in television work by owning or sharing in the operation of educational television stations, by cooperating with local commercial stations, or by installing closed circuits on their own campuses. The greatest use of television facilities has been in the form of closed circuits, with approximately seventy institutions now operating some form of television closed circuit. The particular forms of these closed circuits differ considerably, the difference being dependent on the method by which the installation was developed and its intended use.*

The method of development and intended use of television facilities are basic considerations for administrators of institutions planning to install some type of TV system. Additional considerations must be faced. Within the discussion of the development of television at Idaho State College we should like to suggest some of these considerations and show our approach to their solutions.

TV TECHNICIANS' COURSE

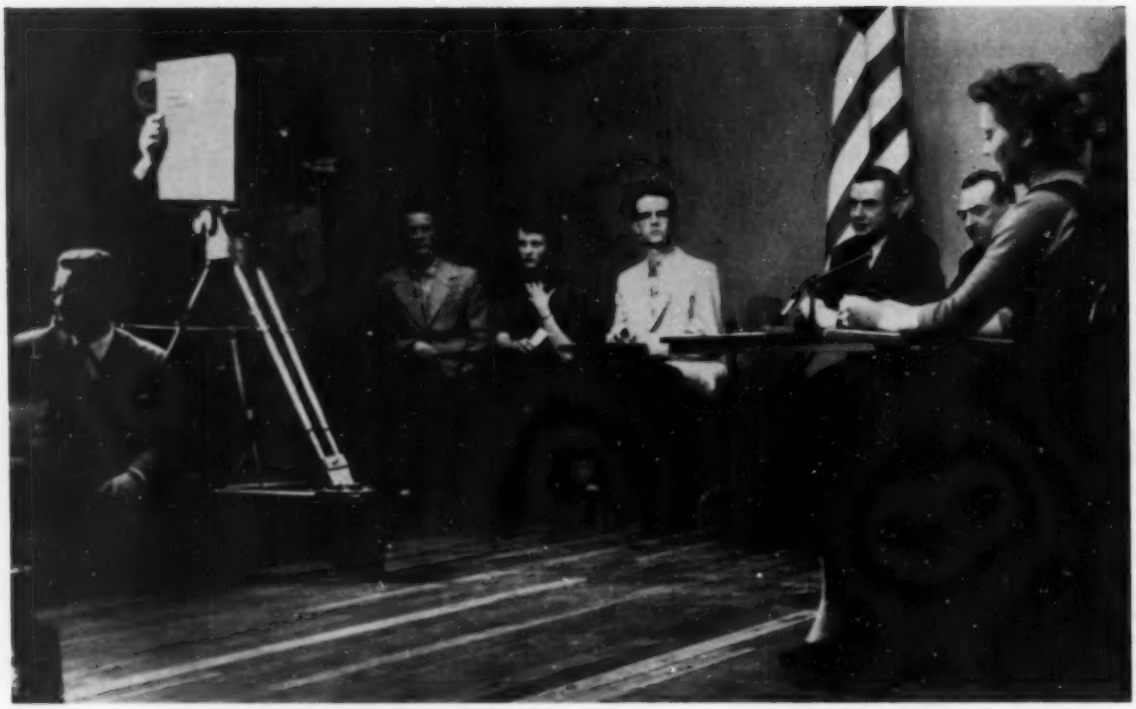
Idaho State College began work in television in 1946. At that time a course in television for technicians was established in the school of Trade and Industrial Education (a state supported, non-academic branch of Idaho State College).

Students in this four-year course have a daily, two-hour class devoted largely to electronic theory and physics, followed by four hours in the laboratory. After basic laboratory work in radio and television during the first two years, the junior year is devoted to design and actual construction of television equipment. During the senior year, after the students are thoroughly familiar with the theory of operation and construction of the equipment, production crews are organized to provide experience in camera operation, technical direction, on-the-air maintenance, and the like.

The existence of the TV technicians' course at Idaho State College has solved for us several problems that confront colleges desiring to install television. The most obvious advantage is that of being able to construct our own equipment. In 10 years Idaho State has built equipment of professional quality that would cost $300,000 if bought commercially. Actual construction costs were less than one-fourth of that amount.

Present equipment includes three image orthicon camera chains for studio use and two for field use, an iconoscope film camera chain, a montage unit, and associated monitoring and sound equipment. A vidicon camera for mounting on a microscope head is being made.

*A brief description of the nature and use of these various facilities is contained in "Closed Circuit Television Installations at Educational Institutions," a report compiled by the Joint Council on Educational Television, 1785 Massachusetts Ave., N.W., Washington 6, D.C.



Idaho's Gov. Robert E. Smylie (in front of flag) and high school government class on program dedicating closed-circuit television system.

Equipment costs could have been further reduced by elimination of the high-cost image orthicon equipment in favor of more vidicon equipment, which is lighter, smaller and less expensive. However, vidicon equipment does not produce a picture of as good quality, and for our purposes in training technicians for commercial stations, which use image orthicon equipment almost exclusively, the additional time of construction and additional expense were necessary.

It has taken Idaho State 10 years and a good deal of trial and error to construct sufficient and reliable equipment to permit effective production of programs. Other schools that may take this approach toward a television installation could expect considerable delay in building sufficient equipment to enable actual production. The more immediate, and for most schools the more practical, means is to buy commercial equipment, the amount and type being dependent upon the contemplated use of the installation.

The establishment of a technicians' course does have advantages that are more readily noticeable, however. Once equipment has been installed, a maintenance problem presents itself. Our equipment is constantly being checked, repaired and rebuilt as a part of the normal instruction. Consequently, failures to the system are few and when failures do occur stand-by equipment is ready to take over while immediate repairs are made.

Other methods of handling the maintenance problem must be used if technicians in training are not available. Some schools rely on staff members of engineering departments or on a specially trained man in the maintenance department. Few can afford to hire a person specifically to maintain the TV equipment. None of these methods can approach the day-to-day preventive maintenance or the immediate repairs provided by a group of persons who have built and who are operating their "own" equipment.

The presence of a "full-time" technical crew becomes more and more important as more production work is planned. The problem of releasing students from classes to participate in rehearsals and productions can quickly mount into a full-sized headache.

Seniors in our technicians' course are available for their full laboratory period four hours each day. Their purpose is to learn to work as a technical team, and they will take on as many programs as can be prepared for rehearsal and presentation during that period. The crew for a typical show includes a technical director; a cameraman, cable puller, and video operator for each of two or three studio cameras; a film man and video operator for the film camera chain; two or three lighting men; audio control and mike boom operators, and a mike boom pusher; a transmitter engineer, and two or three stand-by maintenance men. Probably under no other setup could a crew so large be brought together.

This course for television technicians, which is not found in connection with most educational television operations, has enabled us to solve three problems of prime importance: actual procurement of TV equipment, maintenance of that equipment, and availability of a technical crew for productions.

Another problem that is just being solved at Idaho State is that of adequate space. Like so many of the other problems in connection with television installations, the answer to what is adequate studio space depends upon the use to which the facilities are to be put. Our operation, in preparing technicians for commercial stations, needs to duplicate as closely as possible a commercial layout. It also needs sufficient additional space in control room and studio for instruction in installation and maintenance, and it needs large laboratory space.

Our present facilities have not completely satisfied these requirements. The present studio was enclosed from an ordinary room and is inadequate from the standpoints of space, ventilation, lighting circuits, and noise.

New television facilities at Idaho State College will occupy the upper two of four floors in a Trade and Industrial Building now under construction. The lower floor will contain offices, radio studios, the radio laboratory for technicians, men's and women's dressing rooms, the TV studio with property storage rooms, and classrooms, at least three of which will be equipped with TV receivers. In addition to the second story of the TV studio, the upper floor will contain the control room, film projection room, announce booth, the TV laboratory, and a balcony overlooking the studio.

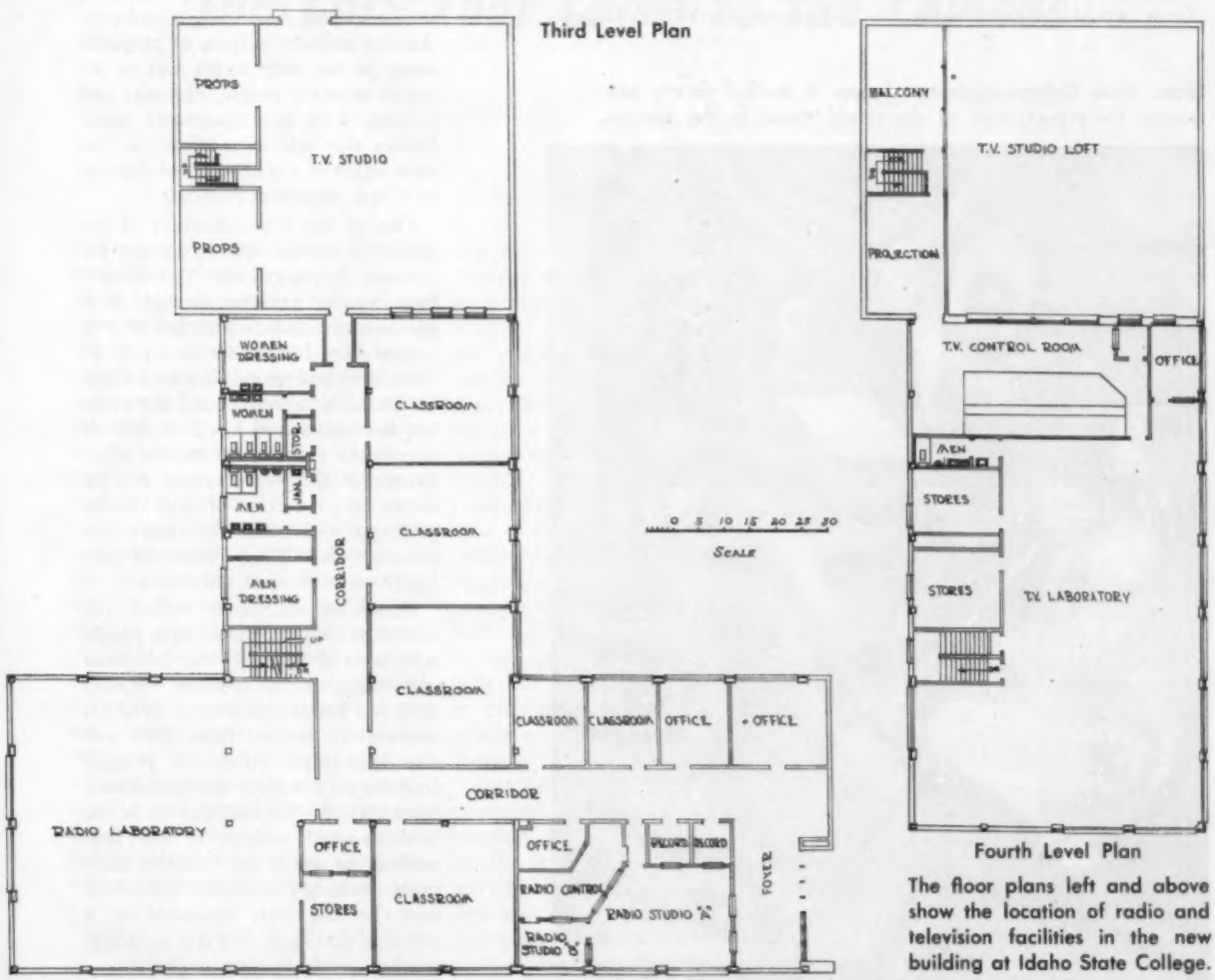
Training for television production has not kept pace with the technical development at Idaho State. This situation is due to the heretofore inadequate studio space to provide both technical and production training, and to the short time that sufficient equipment has been available to permit production. Presently only one course, a workshop in television production, is taught in the speech and drama department, but an increase in this phase of television activity is planned as soon as the move to the new studio is completed.

LACK PRODUCTION HELP

Our problem regarding student assistance for programs, therefore, has been the reverse of that at most other schools. We have ample technical assistance but lack production help. While other schools can rely on TV majors or other students taking a study program with a TV emphasis to act as production assistants for closed-circuit experiments, we still have to develop courses in writing, announcing and production, build these into a curriculum in television, and train students to the point where they can handle jobs as director, floor manager, and the like.

One point on which we can build is an assignment in TV speech, which is included in the curriculum for freshman speech, a required course. With all first-year students participating in this assignment, those who find they like the experience will be able to follow other courses in television as they are offered and thus be able to assist in production.

When construction started on the new studio building in the autumn of 1955, Idaho State had substantially completed work on the first of the two basic considerations which were mentioned at the beginning of this article, the development of facilities. Most of our developmental problems have been solved, and the others are expected to be eased after we move to the new building and studio. But to this point no specific use of the facilities had been planned other than technical



The floor plans left and above show the location of radio and television facilities in the new building at Idaho State College.

training. Occasional college entertainment productions had been sent by closed circuit only as far as our student union, but no schedule of programs had been established.

An increasing utilization of television was suggested in the autumn of 1955 by Bannock TV, the community antenna system which serves Pocatello, where Idaho State is located. Bannock TV had already "wired" Pocatello, that is, strung coaxial cable throughout the city to provide subscribers to the community antenna with television programs from Salt Lake City. They offered to connect the college studios with the "hub" of their operation and to extend their services to all schools in Pocatello. When this installation was completed early in 1956 we had what amounted to a huge closed circuit connecting the college with 11 elementary schools, three junior high schools, the high school and, incidentally, some 1000 Bannock TV subscribers.

The cost of establishing such a closed circuit would be considerable to a college, but with the majority of the facilities—amplifiers located throughout Pocatello and connecting cable—already installed for the commercial operation the additional costs to Bannock TV ran under $10,000. Bannock TV is also providing maintenance on the system, another cost that would be considerable if borne by the college or school district.

With completion of the physical arrangements for this system, a board of advisers for educational television was established with representatives from the college education and speech and drama departments and from the public schools. The function of this board is to oversee this project and any other possible uses of television. It soon became obvious that the services of a full-time coordinator were necessary to provide full utilization of this unique opportunity and to act as liaison between the college, the school district, and the community. Bannock TV and its parent company, Jerrold Electronics Corporation, provided funds to establish the position for one year.

Idaho State College students rehearse a musical variety production for presentation on the closed circuit to the campus.

In reviewing applications for the position of coordinator, the board of advisers had to decide between applicants with educational background and no television experience and applicants trained in television but lacking experience as educators. A combination of talents seemingly had not been developed, because of the newness of this field. In making their decision the board of advisers felt that a background in television on the part of the coordinator would bring full utilization of the medium to the project. The adherence to educational standards would be watched by members of the board and other educators.

Formal dedication of this "community closed circuit" was held last February with programs for elementary school, high school, and adult audiences. Programs were not regularly scheduled for the remainder of the school year and consisted of individual programs to determine subject areas, grade levels, and types of production in which the system could best be utilized during the coming school year. Another primary purpose of programming in the early stages was to acquaint as many people, educators and citizens, with the educational possibilities that television offers. In the early stages of any experiment this can be a very important purpose.

One of the first difficulties of the project so far has been in placing TV receivers in the schools. Two schools have bought receivers through their parent-teacher associations, but no provisions have been made to equip all the schools and no public school funds are available to do so. Until this problem has been solved it will be difficult to conduct experiments on the effectiveness of our programming. But the continued production of high quality programs will mean that more and more schools will find a means of placing receivers in their classrooms.

Television will never replace the teacher as such, nor would most people wish it to if it could. But television can substitute for certain teaching skills and knowledge in areas in which teachers are lacking those skills and that knowledge. After the physical facilities are complete, the second basic consideration—the intended use of the facilities—will remain. In the final analysis the use of the facilities, aside from training television personnel, must be constantly evaluated as a means of adding to, but not replacing, existing good teaching methods.

A control card inserted into an electric control box located at the left of the driver's seat raises a semaphore type of arm, allowing automobile to enter the parking area.

U.C.L.A. decides what is the best thing to do about

The Cars That Come to the Campus

PAUL C. HANNUM
Business Manager, University of California, Los Angeles

SINCE THE END OF WORLD WAR II and with the large increases in enrollment, most universities and colleges have been faced with the increasing dilemma as to "what to do with the cars that come to campus." Particularly on the U.C.L.A. campus the situation has been acute for we increased from an enrollment in the fall of 1945 of 6900 to more than 15,000 students in the fall of 1955.

Our estimate of enrollment for 1965 is approximateiy 24,000 students, with faculty and staff running between four and five thousand. We know that we must do something to solve the parking problems as they rapidly increase.

In March 1954 U.C.L.A. regents authorized a statewide survey of the parking problems on the several major campuses of the university, together with an analysis of the way the situation has been met at other key institutions. They requested that a report and recommendations thereon, together with schematic plans of proposed parking facilities on the Los Angeles, Berkeley and San Francisco campuses, be presented. As a result, an excellent study of this problem was made by our own statewide office of architects and engineers.

In addition to the report for the regents, a separate study was conducted during the spring of 1955 on the U.C.L.A. campus at the request of Chancellor Raymond B. Allen. At that time a committee composed of administrative officers, faculty and students was appointed to make early recommendations so that we might make immediate plans for taking care of the increasing number of automobiles that will be coming to campus in proportion to our enrollment increase of approximately 1000 students annually.

Recommendations made by this committee are now part of our present programming for future needs. The broadly constituted committee was a real educative force in itself. Its meetings were publicized and, when final recommendations were published, symposiums were arranged to try to get students to attend so that they could voice their opinions and objections to the proposed fee system. The fact that the committee received almost no protest letters, after inviting them, and that few persons showed up at the symposiums indicated the good campus relations work done by the committee. It further indicated that there was a general acceptance of the program.

With increasing enrollment, with more students driving their own automobiles, and with the fact that new buildings always seem to have to be located on a favorite parking area, we find ourselves in a real situation.

Our problem is possibly as severe as that existing on any major campus in the United States. This can be attributed also to (1) the poor public transportation facilities in the Los Angeles area, (2) the widespread area from which our students commute, and (3) the current lack of adequate on-campus housing facilities for students.

Each semester we conduct a housing and transportation survey of all students and have been able correctly to

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From a paper presented at the meeting of the Western Association of College and University Business Officers, 1956.

determine the modes of transportation used by students coming to campus. The 1955 results showed that only 10.5 per cent arrived by public transportation, 21.7 per cent were within walking distance, and 67.8 per cent arrived by private transportation. We found that automobiles parking on campus contained an average of only 1.3 passengers. More amazing, perhaps, was the estimate that U.C.L.A. students commuted more than a million miles per week round trip to campus.

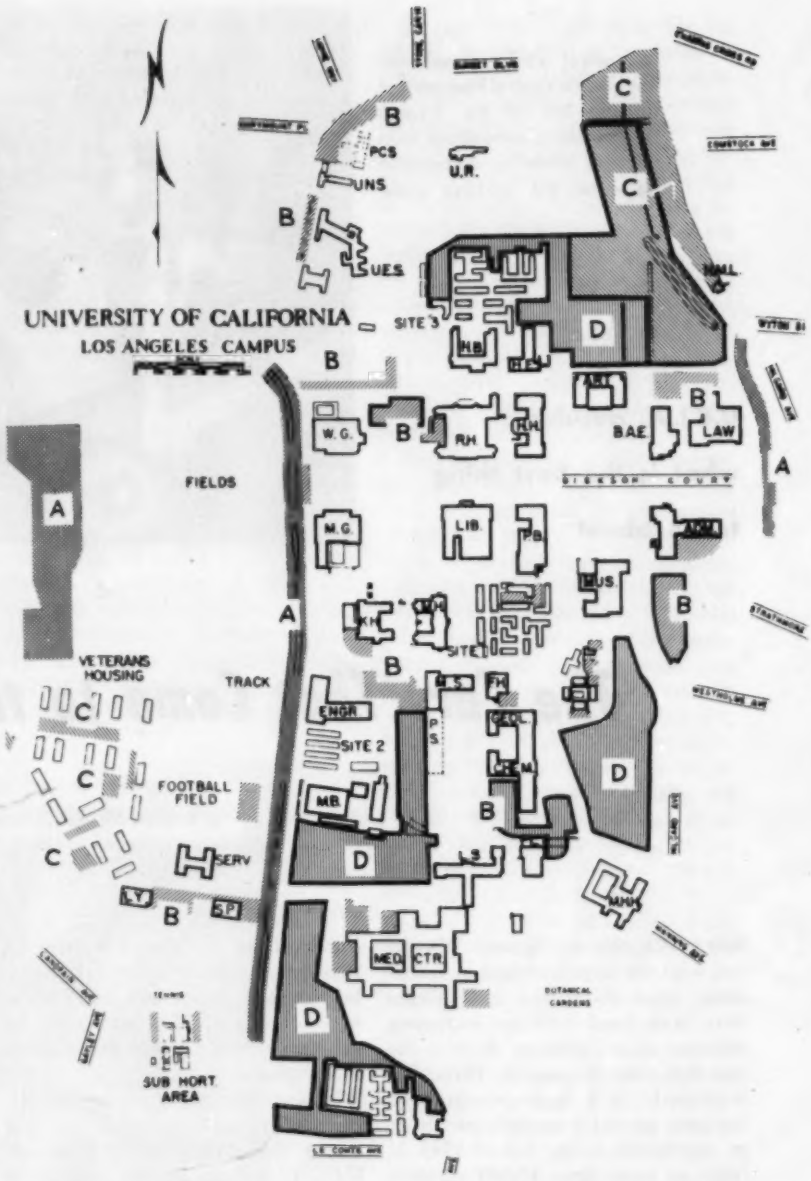
We now have approximately 6700 parking spaces available. This number will decrease within a few months when construction is begun on several building sites now temporarily used for parking. Within the next 18 months we will lose 1200 spaces because of building programs.

Campus parking is now controlled under a plan administered by the business office, through the superintendent of buildings and grounds. Of the 6700 spaces available, approximately 2900 are assigned on a restricted basis to faculty members, full-time employes, nonstudents employed more than half time, and students with ambulatory disability. Windshield decal permits are issued for these spaces in the ratio of about 2 to 1. Also, approximately 500 spaces are available for visitor parking, these being assigned during the daytime by police officers. Another 200 spaces are provided for in loading zones and 3800 spaces are available on campus on an unrestricted basis primarily for students.

On the basis of the projected enrollment and the estimated needs for parking by 1965 we will require a minimum of 12,000 parking spaces on the U.C.L.A. campus.

An advisory committee on parking rules appointed by the chancellor is now functioning to (1) draw up a set of rules for a fee parking system that will govern operation of all parking areas with the exception of any free parking areas, (2) to maintain a continuing review of the parking problem and parking operations, (3) to explore the desirability and feasibility of extending university control beyond its present extent to include the imposition of fines and application of receipts to the cost of maintaining the parking system.

The five main types of control for parking areas are: signs, attendants, decal windshield stickers, mechanically controlled gates, and meters.



KEY TO PLAN: A, unassigned; B, staff only; C, students only; D, Student and staff. Areas surrounded by a heavy line are mechanically controlled.

The use of signs doesn't always accomplish what we would like it to, as they are easily ignored and create the need for frequent policing of an area. Also, enforcement penalties are not too effective.

The use of parking attendants is an effective control but an expensive one unless a fee system is used. We believe the use of attendants should be confined to the larger parking areas because of the cost factor.

Use of decals is a fairly effective control and possibly the most widely used; however, with this method it is necessary for the campus police to patrol the areas frequently, and this is an expensive operation and enforcement is sometimes difficult.

The mechanical control method, such as electrically operated gates, is effective. An excellent article by H. W. Pearce, superintendent of buildings and grounds, University of Illinois, appeared in the April 1956 issue of COLLEGE AND UNIVERSITY BUSINESS on this subject. For the last year we have been testing the installation of such a system in a parking lot with 520 spaces to determine whether a

similar control on all of our larger lots would be feasible. We believe we have amply proved that this system exercises a very desirable control over the movement of vehicles.

For those who might not know how this system works, may I briefly explain that it is a control which is placed at the entrance and exit of any parking area whereby the operator of the vehicle has in his possession a control card that is inserted into a slot located at the left of the driver's seat as the car enters the parking area. The plastic card contains metal particles in a pattern somewhat similar to a key and, by inserting the card into an electronic control box, an electric mechanism raises a semaphore type of arm allowing the automobile to enter the area. As the vehicle passes the gate, a treadle in the pavement causes the gate to close. The same procedure is necessary to exit from the lot, or exit may be by treadle control only, if desired.

A counter control also may be included that will prevent the gate from opening after so many vehicles have entered and until there have been exits that would clear additional space. This would prevent overloading of parking areas. The electronic control device and the card that operates it can be "keyed" to operate under many combinations such as for different hours of the day or days of the week.

ISSUE DECALS ALSO

In addition to issuing parking control cards, we also have provided decals for automobiles using this control lot, and we have particularly tried to make assignments to persons who "pool" the use of their cars. Although we realize that it is difficult to educate people to work out a pooling arrangement, we believe that a mechanical system for which a fee is charged will help.

One of the outstanding puzzles in our limited experience with this type of control has been the consistent vacancy of spaces. Normally when the lot was not controlled, all spaces were taken early in the morning and the lot was completely filled most of the day. When we first put in this control system as a test, we issued only one card for each of the 520 spaces. We immediately found out that only one-half of the lot was occupied on the very busiest mornings of the week so we started gradually to overissue. We have overissued by 37 per cent and still we have more than a hundred vacant spaces during peak occupancy of the campus. Possibly the principal reason for this is that the spaces are reserved and those who normally would arrive at a later hour know that they will have a parking space whenever they arrive; consequently, they do not park all day and are able to enjoy "in and out" privileges.

During this experimental period we have had few attempts to "beat the

An aerial view of the U.C.L.A. campus showing the many parking areas, accommodating approximately 6700 automobiles. Of this number, about 2900 are assigned on a restricted basis.

system." Several times we have found an MG or a Jaguar sneaking under the semaphore signals, but the drivers usually get caught and are issued a traffic citation.

At the time of the installation of the system, we considered either purchasing the equipment or renting it; we decided on the latter. The rental agreement has covered the installation and any necessary repairs or adjustments, which have been few. Because of any possible mechanical problems that might arise, we believe that wherever possible two entrances and two exits should be provided so that, if one gate is in trouble and passages are blocked, there is another gate that is available.

Meters are effective particularly for areas where guest or general public parking is desirable. To us their main objection is the necessity for frequent patrolling.

TWO TYPES OF SURFACES

As to types of surfaces normally applied in parking areas, the least expensive type, which we use for temporary installations (to last a minimum of three years), is the "one-coat rock and oil" application. Our cost averages $20 per car for this installation.

The second type, which we expect to provide adequate service for at least five years, is the "two-coat rock and oil" applied alternately, and our cost averages $30 per car.

For permanent parking areas, we apply asphalt concrete paving at an average cost of approximately $45 for a 2 inch covering, $75 for a 3 inch covering, and $100 for the 4 inch covering.

In tests conducted on our campus we have found that the maximum utility of a rectangular space for parking is gained with right angle parking, that is, with an automobile heading directly in perpendicular toward a curbing.

There are times, however, because of the width of a parking lot, it is necessary to provide angular parking. When angular parking is necessary, we also provide one-way flow of traffic with a minimum of 48 feet from curbing to curbing; cars are parked at an angle of approximately 45 degrees. Ten feet between the white lines for auto spacing is our standard, and an 18 foot roadway is desirable. For right angle parking, the distance between curbing is a minimum of 55 feet, with 60 feet being more desirable; white lines marking off the spaces are 8 feet apart. When curb parking is required, a minimum of 20 feet in length is desirable for each car.

CONDITIONS TO BE MET

As a result of our studies, we are convinced that four conditions must be met in order for us to solve our growing parking problem:

1. Provide an economic and effective control over parking space. This includes the use of decals for the smaller lots, the use of parking meters for the general public, and the use of a mechanical control on the larger areas.

2. Adopt a fee parking system. State funds have not been obtainable for the construction of parking facilities; consequently we believe this method should be used to produce a source of revenue for the construction of such areas. Also, it is our belief that the imposition of fees will encourage group riding and possibly a greater use of public transportation. It may also discourage persons who live close to campus from driving. Fee parking is in use at the University of Washington, Iowa State College, University of Minnesota, Northwestern University, Brigham Young University, Cornell University, University of Kansas, University of Pennsylvania, and Harvard University.

3. Provide additional surface parking for approximately 1000 cars wherever feasible. We have located such an area on the U.C.L.A. campus on a site farther from our central campus area; consequently it is a "free lot" open to staff or students. This is the only major sized free area on campus, and we are observing how it is being accepted in preference to the closer areas where a charge is made. We are planning to relocate the tennis courts and provide 500 parking spaces underneath 18 tennis courts. This structure is to be located adjacent to an elevated shelf toward the hilly side of our west campus.

4. Construct multilevel parking decks. We believe that this is the best solution toward providing additional parking space on campus for the next 10 years, particularly in relationship to our large building program. Currently, our plans call for the construction of such a unit to accommodate 1000 cars at a total net project cost of $1,100,000. The first unit is to be reinforced concrete with open sides and ramps, built on the side of a hill where access can be had from different levels. Our building cost estimate is from $800 to $900 per car, the project cost being approximately $1000 per car. Our campus has 400 acres, but with the tremendous building program since World War II and the plans for the future, we realize that not only will our buildings have to go up in the air, but parking structures of four, five and six decks will have to be constructed.

FEES FOR PARKING

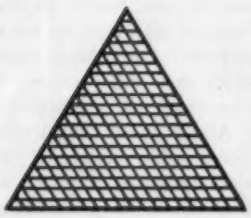
The fee to be charged depends upon the purpose for which the income is desired. In our case we estimate our fee on the bases of the expense necessary: (1) to install mechanical controls; (2) to provide the annual debt service requirement necessary to finance the construction of multilevel parking decks, and (3) to provide for the expense of maintaining and operating the entire system. It is our intent to furnish parking facilities on a cost basis. In our original estimates of the cost of installing equipment and constructing the first multilevel parking unit for 1000 cars, and also providing surface parking for 1000 cars, we determined that a semester fee of $10 would be necessary.

There seems to be no one formula that can be used to solve the parking problems for all universities and colleges. There are too many factors involved.

The more important ones are: (1) enabling or crippling legislation affecting a university; (2) cost, proximity and service of public transportation in the vicinity; (3) local and state building codes; (4) relations with local city officials and police; (5) cost of surrounding property; (6) amount and availability of parking facilities by municipal and private owners; (7) topography of campus and surroundings; (8) amount and location of student housing; (9) climate.

In summary, it would seem that each institution must investigate its own problems and then, by using the experience of others in connection with the types of controls that are available, apply these according to the needs as dictated.

A final recommendation might well be the one included in our recommendation to the chancellor, namely, "that an inquiry be conducted into the possibility of reviving the art of walking, not only as a means of transportation, but also as a pleasurable form of exercise and an opportunity for conversation and meditation."



BUILT-IN SAFETY

is part of the architect's business

OTTO J. TEEGEN
University Architect, State University of New York, Albany

SAFETY IS NOT A RECENT DISCOVERY, nor was the National Safety Council the first to promote it. I would not presume to maintain, although professional pride might tempt me, that architects were the first to practice it. For although it is true the prehistoric builder creating shelter for himself and family had to consider safety in making sure the first heavy wind would not topple the roof supports on the heads of his offspring, the chances are his father's father, who for his nightly cover had but the sky and the stars overhead, cautioned his children not to play with fire. Today, incorporated physical safety is so much a part of our daily lives we are hardly aware of it.

To probe the situation a little, keep in mind your own college buildings. Have you ever given thought to the vast number of accepted devices and practices originated solely for the sake of safety that have through the years found their way via general construction methods and building codes into our structures? They are now incorporated, as a matter of routine, in every architect's drawings and specifications. Let me point out a few.

Start with the foundations. Although everyone is aware of the hazards of building a house on sand, who can determine what soil is good? The architect through experience might hazard a guess, but he cannot afford to guess. Even if he knew rock was evident, he would want to know the nature of that rock, whether ledge, large boulders, shale that could be excavated with a steam shovel, or hard stone that would have to be line drilled and blasted. The only way he can be sure is to have core borings taken at several points along the path of his intended foundations, then have the nature of the soil contained in each foot of the drill as it penetrates the earth examined and a description of the various strata to bed rock recorded. Not until he has such data can he safely proceed with the design of footings. It would not have been safe for him to have assumed the presence of rock, allowing a load of from 6 to 8 tons a square foot, when the core boring data revealed the soil was mostly silt and clay that would support no more than 1 ton per square foot.

After making sure of his bearings, the architect determines the probable weight of his superstructure. The size and location of the steel supports depend somewhat on the system of construction he decides to use, but mostly on the weights to which the various floors are to be subjected. For general classroom use where students and occasional furniture are the only considerations, the steel supports need be estimated at but 75 pounds per square foot, but heavy industrial machinery having concentrated loads may call for an allowance of from 125 to 240 pounds per square foot.

All such loads are transmitted via slabs, beams and girders to the columns. Assuming a steel frame building, are these beams and columns designed to take an exact load? Can they for the sake of safety take more? The steel tables used in our computations allow considerable leeway, in the sense that the tensile strength of steel has been determined at 20,000 pounds per square inch, yet the yield point, *i.e.* the point at which the steel under test begins to fail, is actually 35,000 to 40,000 pounds per square inch, and the point at which real failure might actually occur may be from 60,000 to 80,000 pounds.

I say "may" because no two pieces of steel beyond the yield point are the same. Thus it is quite possible for the steel members we design for a specific load conceivably to take three times that weight before they will begin to show signs of deflection or bending. We have been allowed what is technically known as a factor of safety of three. That's for safety.

The columns supporting the floors, and on which the brick, stone, windows and other facing materials are a part, also must be designed to take wind loads, those lateral thrusts that can make an entire building deflect several inches. Although a small building does not present the wind problem of an Empire State, the condition is always potential, and the architect always includes it in his computations. That's for safety too.

The wind also has an important bearing on the use of clear glass areas. Some of you may feel the way architects throw around tremendous sheets of glass these days they cannot be too worried about the wind, but they are. The architect of the U.N. Secretariat spent most of a recent heavy windstorm at the building as his mind could not be at ease anywhere else. Even though glass has a greater strength today than it had formerly, it is still subject to strain.

Windows serve the principal functions of providing daylight and air, two items that figure prominently in building codes in order to guarantee that no interior spaces will suffer inadequate light or insufficient natural ventilation, both hazards to health. In these days of excellent artificial illumination and mechanical ventilation, including air conditioning, it may seem needless to keep stringent rules, but one must remember codes are written for and directed toward not those who observe them but those who hope to evade them. Consequently, we have

From an address presented at the third National Conference on Campus Safety, M.I.T., 1956.

codes that read, in part: "Each habitable space shall be provided with natural light in an amount equivalent to that transmitted through clear glass equal in area to 10 per cent of the floor area of the habitable space." Fortunately, with the present architectural idiom calling for more and more glass, this rule would seem to be out of date, but we still have occasion to check this very detail. That's for safety.

Even oftener do we need to check the natural ventilation being supplied to rooms, that provided through openable parts of windows, grilles or louvers. The code says: "Each habitable space shall be provided with natural ventilation through openable parts which are equal in area to not less than 5 per cent of the total floor area." In other words, classrooms, offices or residence hall sleeping rooms must have an openable window area equal to 5 per cent of the area of the room.

That does not sound unreasonable, yet in our present state university dormitory program I have had occasion to check window patterns in which the openable part was less than 5 per cent. That is because some architects, not trying to evade the law but intent on creating interesting fenestration patterns with large fixed sections, provide too few windows that are movable. As a matter of fact, we want much more than the minimum specified by law, since the chances are that much of the air coming through the windows will be cut down by shades and draperies. And that's for safety.

Everyone is acquainted with the importance of exit fire stairs, but perhaps not with the many codes that prescribe how many, how wide, how high, and, for that matter, how low they must be carried. It is a relatively simple matter to locate required fire stairs on plan so that the maximum distance anyone need go for escape in one of two possible directions will be 100 feet from the corridor entrance of the room in which he is working, but often it is difficult to comply with all the rules relating to the stairs themselves.

Let me quote a few requirements related to Class A stairways in most college buildings: "There shall be no variation in the width of treads and the height of risers in any flight. . . . Where material of stair treads and landings is such as to involve danger of slipping, nonslip material shall be provided on tread surface. . . . Winders are not permitted. . . . Stairs shall be at least 44 inches wide, clear of all obstructions except that handrails attached to walls may project not more than 3½ inches at each side within the required width. . . . If stairways are 88 inches or more in width, they shall be provided with intermediate handrails not more than 66 inches on center. . . . No stairway shall have a height of more than 8 feet between landings."

A further rule usually limits the number of risers in a continuous flight without a landing to 15. The actual width of stairs is determined by the type of occupancy of a building. For schools in the "low hazard" class this is spelled out in terms of the number of occupants on each floor, usually estimated at one person to every 40 square feet of net area.

CODES VARY IN REQUIREMENTS

From that point on, codes vary greatly in the area required for each person while in the escape stairs, but in New York City it is mandatory that all people estimated to be in attendance on one floor be provided with standing room or stairs and landings running from that floor to the next below.

This method of calculation makes for what appears to be an inordinate amount of stair exit space, particularly when one is pressed to deliver the maximum net usable area. In a nine-story building for the Fashion Institute of Technology we are building in New York City the total area given over to fire stairs, plus a separate required firemen's staircase used only for their use, amounts to somewhere between 5 and 10 per cent of the gross area of each floor. The answer to what price safety under those circumstances is that it can be costly.

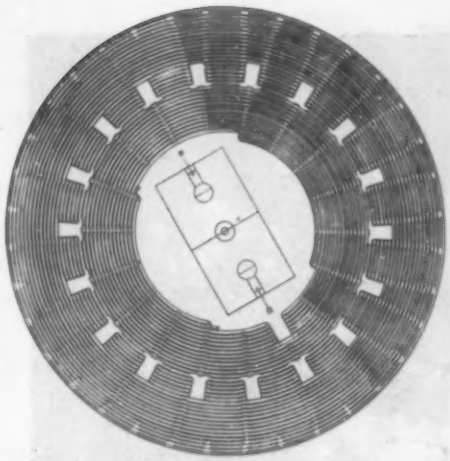
Safety considerations are indigenous in every phase of architectural planning. An architect's every move is affected in one way or another by his knowledge and recognition of some law or code having safety as its purpose. In addition, he is constantly striving through good planning to create circulation patterns that will eliminate safety hazards.

There are not only many safety considerations involved in construction but many agencies involved in their development. Some code governs almost every functional detail of every building, whether it be fire rating of partition walls, the concrete or terra cotta block protection of all steelwork, ventilating stacks, exhaust ducts from kitchen range, corridors or chemical hoods, doors, floors, elevators, fire alarms, electric panel boards, stage curtains, wiring of all kinds, or sanitary work, down to the minimum number of lavatories and water closets that must be provided for a specified occupancy. All of these considerations are as inextricably connected with architectural design as they are with safety. Each must be acknowledged and incorporated in the building while it is being planned.

The rules and regulations covering details related to our buildings comprise the basic principles on which our planning and construction practices are laid. It is surprising to realize how many codes exist which, with the safety, health and welfare of the occupants of the buildings of all types in mind, affect our individual lives. In New York State we are governed by important codes such as the city building code, state building construction code, the state labor department code, fire underwriters code, and industrial hygiene code, to name but a few.

Our state labor code, for example, looks into every nook and cranny of human employment, and its rules, which have the teeth of the law behind them, must be observed by the architect as well as the employer. Looking through the code book trying desperately to find some rules that might negate a few the department had thrown at us relative to a food research building we had submitted for approval, I was fascinated to learn of this department's wide range of interest. It not only included items that governed the planning of almost every type of building that could ever come our way, but wound up with a section on "Rules Relating to Aerial Performers." This startled me at first, yet why shouldn't the man on a flying trapeze have as much right to expect his employer to provide safety conditions as the man at a machine?

Many agencies have both an interest in and authority in determining under what physical conditions we shall work and live, but the man behind the eight ball is the architect who must by law translate these into integral parts of the building. In addition, he has a moral and ethical responsibility to add any safety features, not necessarily required by law, that will benefit the occupants. This he does to the best of his ability. The architect plies his trade with every consideration for those who must occupy the buildings.



Under the Roof of Wichita's Field House

LESTER ROSEN
Director, Public Relations Office, University of Wichita, Wichita, Kan.

TO THE NEW CIRCULAR FIELD HOUSE at the University of Wichita last year there came close to 300,000 persons to witness events ranging from 16 games of collegiate basketball, the Ice Capades, and the Harlem Globetrotters to the "Messiah" and a Home and Garden Spectacular.

This campus facility, completed in late 1955, gives the city of Wichita its largest indoor arena; the seating capacity is 10,235. More important, it gives the municipal university an adequate home for its intercollegiate basketball program and expanded quarters for the men's physical education department.

Five years prior to the opening of the Field House, when the University of Wichita offered for sale basketball tickets for its first season there were only six buyers.

The Wheatshockers were playing all of their games in an antiquated downtown arena seating 3600.

In 1951, Ralph Miller, a former University of Kansas basketball star and the coach of the Kansas Class AA high school champions at Wichita East High School, became head basketball coach at the University of Wichita. He brought with him a nucleus of his local high school championship squad, and soon university basketball fortunes began to rise. By 1954 every reserved seat available was sold to students on a season basis.

BUDGET $1½ MILLION

After several years of study, the regents authorized the architectural firm of Schmidt, McVay and Peddie of Wichita to design a building that would provide a basketball arena with a seating capacity of approximately 10,000 and that would house the men's physical education department. The budget for this was $1½ million.

Because of the strong economy factor, the architects elected to design a circular building with peripheral seating. The circular plan permitted use of domed construction with a tension ring to balance thrust, as it was felt that a dome would be the most economical roof structure.

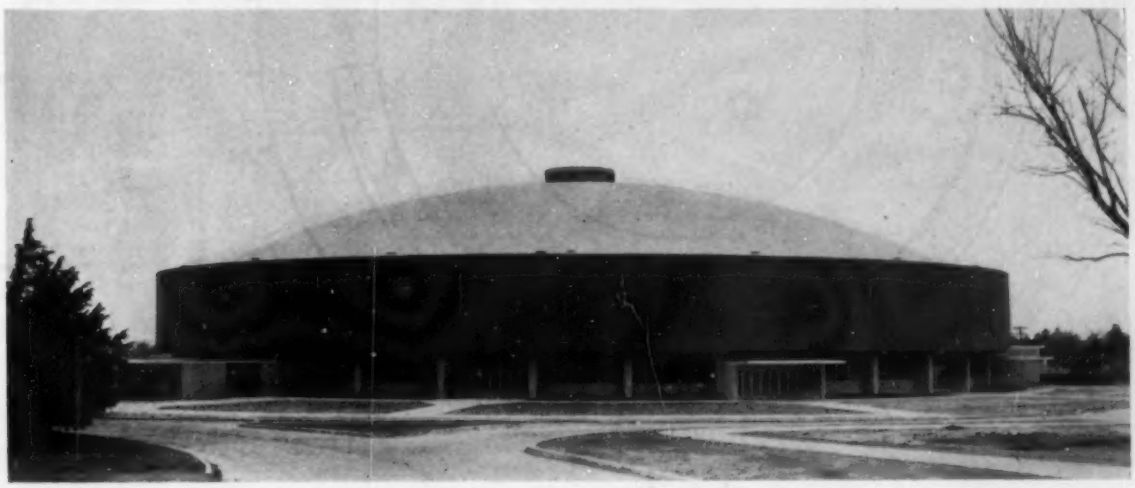
A total of 432 tons of steel went into this unique lamella type of roof, believed to be the first of its kind in the United States. The cost of $2.96 per square foot of roof surface, including 17 cents per square foot for the architect's fee, bears out the economy of this roof.

The perfect circle design of the arena has another distinct advantage. Out of 10,235 seats, none is farther than 86 feet from the playing floor.

The Field House contains 127,000 square feet of floor space. A concourse 22 feet wide completely encircles the arena, which affords an ideal display area of 17,600 square feet.

From the floor to the highest part of the roof is a distance of 76 feet,

University of Wichita Field House, appropriately tagged by some as "The Roundhouse."



which is the equal of a five-story to six-story building.

Ventilation is provided by 36 air handling units distributing 300,000 cubic feet of fresh air every minute.

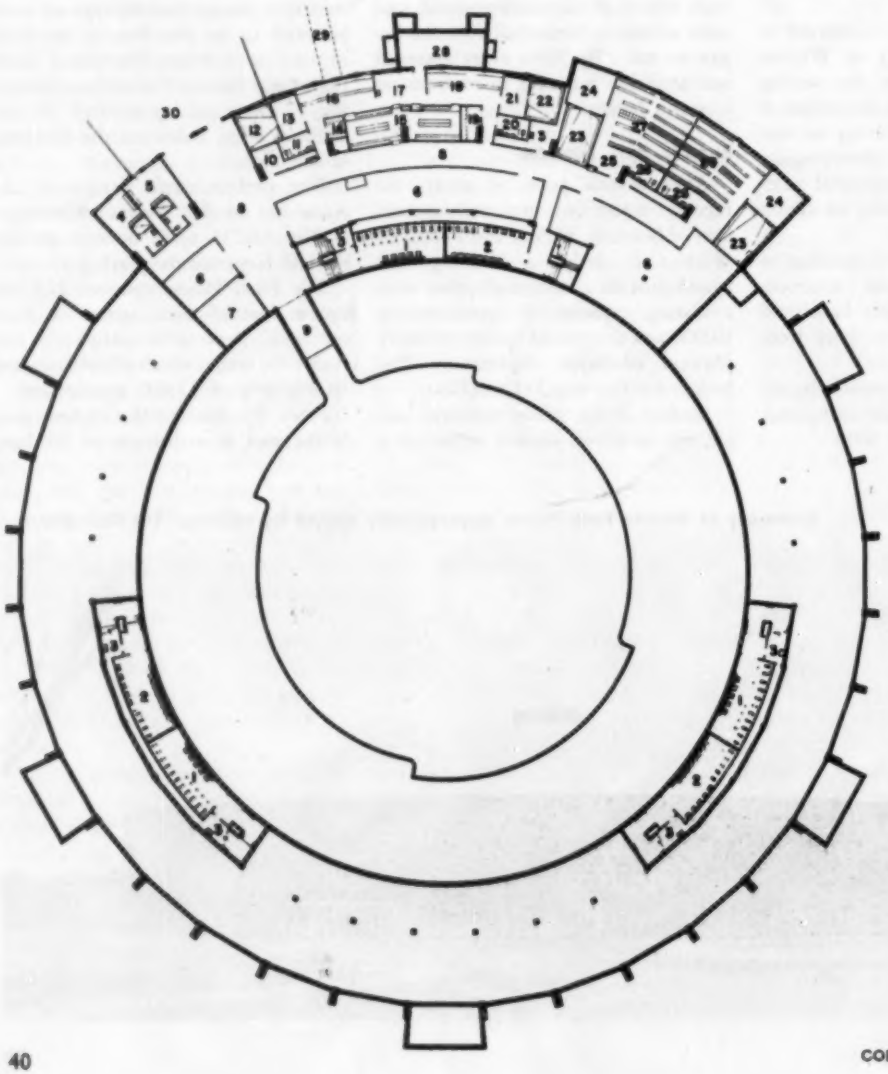
There are six major entrances into the building and 10 exits. Six concession stands provide adequate refreshment facilities.

Parking facilities contain space for 2000 automobiles within easy walking distance of both the Field House and the football stadium, Veterans Field.

Two types of seating have been used in the Field House: 3834 molded plywood chairs of the theater type, and the rest, bench seats of the stadium type. The theater seating was provided to stimulate season ticket sales. Sale of more than 3000 season seats during the first season demonstrates its value.

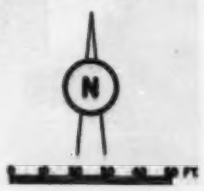
Perfect lighting conditions have been afforded through the use of color-cor-

Above: Opening night in the Field House found the University of Wichita playing host to the University of Utah's basketball team.



PLAN OF LEVEL 1

1. Women's toilet
2. Men's toilet
3. Janitor's closet
4. Officials locker room
5. Coaches locker room
6. Storage
7. Electric equipment room
8. Corridor
9. Ramped passage
10. Laundry
11. Freshman toilet
12. Freshman shower
13. Freshman drying
14. Freshman clothes drying
15. Equipment room
16. Freshman dressing room
17. Training room
18. Varsity dressing
19. Varsity clothes drying
20. Varsity toilet
21. Varsity drying
22. Varsity shower
23. Shower
24. Drying
25. Vestibule
26. Toilet
27. Locker room
28. Mech. equip. room
29. Tunnel to boiler house
30. Service drive

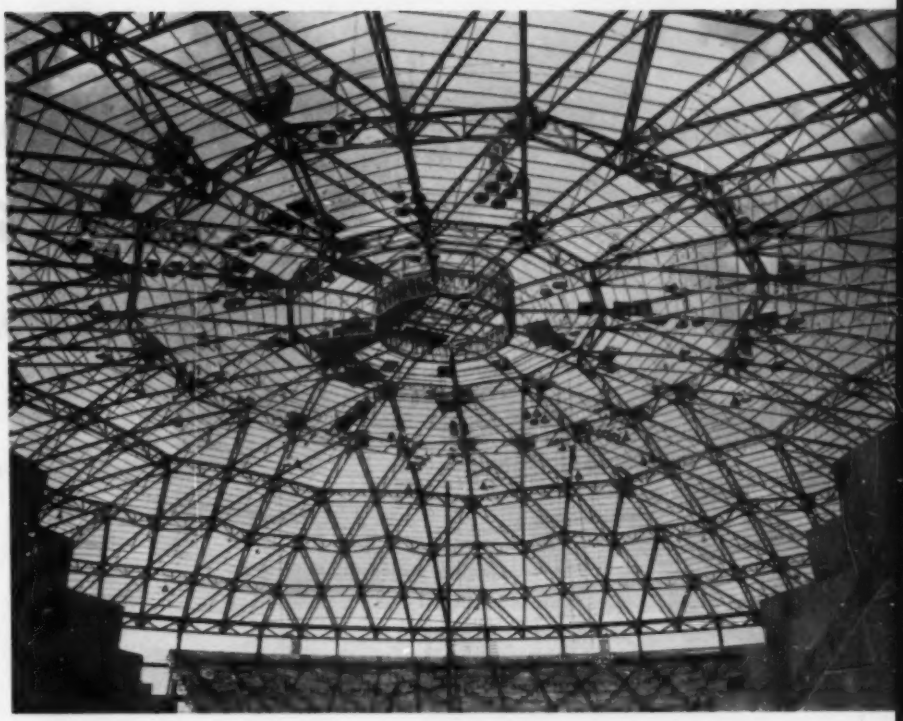


rected mercury vapor lighting in the arena. There are 156 high-bay prismatic reflectors suspended on short twin hangers, with provisions for removal and servicing. Each reflector is equipped with a 400 watt color-corrected mercury vapor lamp. These provide ideal conditions for basketball play and for natural photography.

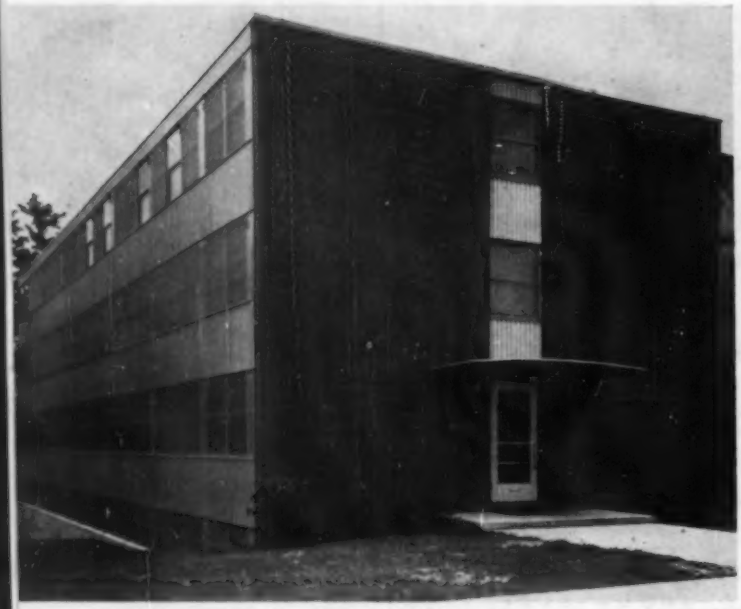
Three large classrooms for the men's physical education program have been provided on the main floor concourse. Office facilities for the athletic department and for the coaching staffs are located within the building.

Of the total expenditures, $500,000 was financed through revenue bonds. The university has pledged a certain amount of its yearly income from the Field House toward the amortization of the nontax bonds. The remainder of the building cost has been handled through tax improvement bonds, which are financed through an annual 1¼ mill levy on real property in the city.

In its first year of operation the Field House attracted 300,000 persons. Financially, the university has realized over $214,000 from the season's activities. This amount includes $173,859 from basketball ticket sales.



Above: Umbrella of steel. This view shows lights in place prior to completion of roof. Below: arena. Cost of Field House, including architect's fee and mechanical, electrical and seating contracts, was $1,405,700, or $11.05 per square foot.



Exterior and floor plans of girls' hall

Wisconsin Gets Off to a Good Start in Cooperative Housing

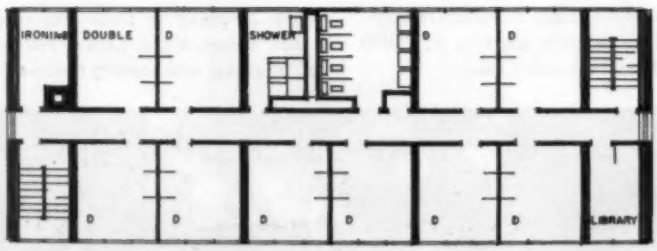
LEE BURNS
Assistant Director, Division of Residence Halls
University of Wisconsin, Madison

AT THE UNIVERSITY OF WISCONSIN, as at most colleges and universities, a great many students must finance their education from their own earnings or from scholarships. From a study made in 1952, 88 per cent of Wisconsin undergraduate men and 73 per cent of undergraduate women earn a part or all of their college expenses. In the case of men students, their earnings supply an average of 53 per cent of their total college expenses. Approximately 10 per cent of Wisconsin's students are entirely self-supporting.

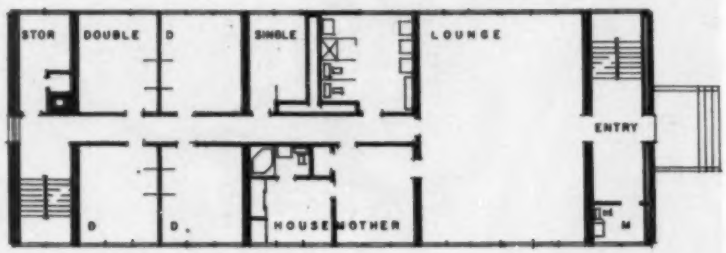
The pinch of increasing costs presents a difficult situation for these needy students, who represent some of the university's finest scholars. Lack of finances often forces such students to live in substandard housing, their scattered rooms far removed from campus and university life.

In 1954 President E. B. Fred appeared before the state building commission with a plea for funds to help finance two low-cost houses. These would represent a pilot study in housing needy students. It was recognized that the construction of two houses, each housing 50 students, could be only a start toward meeting the problem. Legislators were interested and, as a result, appropriated $184,000 of a total estimated cost of $300,000 for the two pilot houses.

Then came more serious study by university and state officials as to the

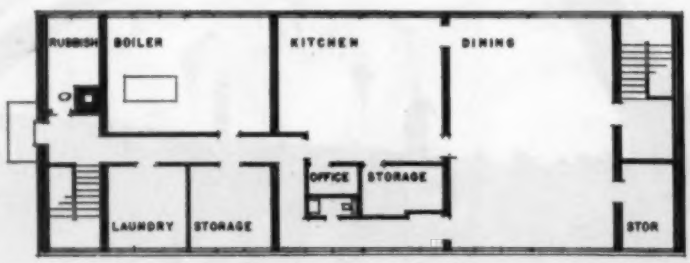


SECOND AND THIRD FLOOR PLAN



FIRST FLOOR PLAN

0 5 10 scale 25



BASEMENT FLOOR PLAN

Two pilot structures have proved helpful, enabling the needier Wisconsin students to make substantial savings in board and room charges. More such houses will depend upon additional finances.

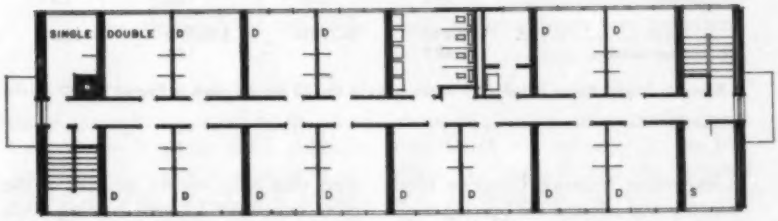
Exterior and floor plans of men's hall

best way to begin a low-cost housing program. Two approaches were decided on:

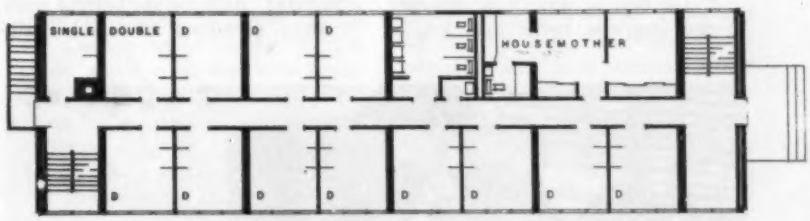
1. The houses must be built economically, furnished moderately, and yet be efficient and comfortable. Fireproof construction was a necessity; facilities for group living activities had to be considered, but all "frills" were to be eliminated. A target cost per resident for site, house and furnishings of the men's unit, without food service, was set at about $2500; and for the women's unit, with food service, at $3000 per resident.

2. A plan for operation had to be established that would bring every economy possible to the students and yet give the greatest assurance to the university and the state that costs would be low, that good group living would be promoted, and that the investment by the state and the university would be protected.

Let us examine briefly how these aims were met.



SECOND FLOOR PLAN



FIRST FLOOR PLAN

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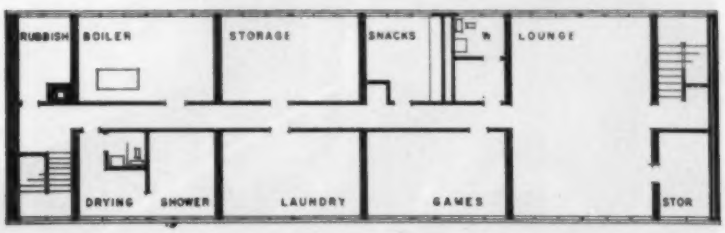


BASEMENT FLOOR PLAN

BUILDING AND EQUIPPING HOUSES

A local architectural firm, Weiler and Strang, and Associates, together with members of the physical plant planning division and the state engineers' office, did considerable research and decided on these features:

1. The structures were to be limited to two or three floors, plus a basement, in order to eliminate steelwork

Table 1—Cost of Construction, Equipment and Site for Cooperative Houses

	Bayliss House (50 Women) Bd. and Rm. Facilities		Schreiner House (55 Men) Room Only Facilities	
	Total Cost	Cost per Student	Total Cost	Cost per Student
Cost of building	$133,718.00	$2,674.36	$107,317.00	$1,951.22
Cost of equipment	19,053.00	381.06	8,500.00	154.55
Cost of building and equipment	152,771.00	3,055.42	115,817.00	2,105.77
Cost of land	12,528.00	250.56	12,328.00	224.14
Total cost of project	165,299.00	3,305.98	128,145.00	2,329.91
Amount appropriated	109,000.00	2,180.00	75,000.00	1,363.64
Balance to be amortized	56,299.00	1,125.98	53,145.00	966.27

Table 2—Budgets for Cooperative Houses for Academic Year 1956-57

	Bayliss House (50 Women)		Schreiner House (55 Men)	
	Bd. and Rm.	Per Student	Room Only	Per Student
Housemother	$ 2,200	$ 44.00	$ 2,000	$ 36.36
Cook	2,000	40.00	—	—
Janitor service	150	3.00	—	—
Accounting service	300	6.00	240	4.36
Food	8,000	160.00	—	—
Supplies	700	14.00	325	5.91
Rent	5,930	118.60	4,820	87.64
Insurance	200	4.00	110	2.00
Electricity	1,200	24.00	550	10.00
Telephones	450	9.00	315	5.73
Laundry	100	2.00	30	.55
Water and sewage	225	4.50	175	3.18
Minor repairs	175	3.50	100	1.82
Social security	100	2.00	50	.91
Fuel	2,000	40.00	1,550	28.18
Miscellaneous	120	2.40	105	1.91
Total	$23,850	$477.00	$10,370	$188.55
Est. cost per resident	477		188	

Board in Bayliss House includes 20 meals a week for 33 weeks; room is figured for 40 weeks.

or expensive framing. Concrete block masonry was selected for bearing walls. Precast concrete planks were selected for floors and roof because they were economical and needed only to be painted to produce a finished ceiling.

2. The bearing walls were designed to run crosswise rather than lengthwise, thus reducing the amount of the more expensive 12 inch bearing walls by about 32 per cent. Twenty-four foot spans of 8 inch precast concrete planks proved more efficient than shorter spans. All columns and posts were eliminated. Running the bearing walls crosswise permitted all outside walls of sleeping rooms to be curtain walls with aluminum double hung windows and aluminum siding. Three large windows were included in each room. No plaster was used in the buildings.

3. Sizes of student rooms were kept at a minimum. Double rooms in the men's unit measure 10 by 12 feet with an 8 foot ceiling; the women's are 11 feet 4 inches by 13 feet 6 inches but the ceiling height is only 7 feet 4 inches. (The men's unit requires a double deck bed.)

4. Other architectural economies were: use of sprayed-on chemical glaze on concrete blocks in toilets and shower rooms rather than glazed tile; colored concrete for floors in toilets and showers; exposed conduit throughout; elimination of electric wall switches in rooms by careful placement of wall bracket fixtures; placing the shower room, in the men's unit, in the basement to eliminate duplication of fixtures and to avoid shower stall trouble; painted concrete block partitions; full utilization of basement areas. The women's basement includes an adequate kitchen, dining and food service area, laundry room, incinerator room, and utility room. The men's basement has a lounge, a ping-pong room, a kitchenette, laundry, powder room, shower room, incinerator and utility rooms.

5. The equipment was to be sturdy yet attractive. It was selected with an eye for residents making future simple repairs. Some bedroom furniture was used equipment that had been refinished. The kitchen in the women's unit was planned for simplicity of operation and minimum maintenance and includes stainless metal equipment, electric stoves, and a dishwasher. Dining room tables have impervious plastic tops.

Table 1 indicates the results of the foregoing planning from the cost standpoint. The cost of the building alone for the men's unit amounted to $1951 per resident, and for the women's unit $2674 per resident. The buildings are safe, comfortable and adequate.

The concrete block exterior of one residence has been painted terra cotta;

In addition to housekeeping and maintenance, cooperatives are responsible for all minor building and equipment repairs, including interior painting, although the university provides the paint.

the other is forest green. The simple, clean lines and the pebbled-finished aluminum siding, with a large expanse of windows, have resulted in attractive buildings and a fine acceptance of the houses in an older neighborhood bordering the campus.

First floor lounge in Zoe Bayliss House, cooperative for women at the University of Wisconsin. Main entrance leads into this room.

OPERATING THE HOUSES

Together with a faculty committee, members of the residence halls staff and the university staff set up the operating plan. Two criteria were established early:

1. The plan should keep the operating costs at a minimum and, at the same time, protect the university's interest and investment.

2. The plan should assure residents ample opportunities for educational and leadership training.

Keeping these aims in mind, it was decided that the greatest opportunities for savings to students was a cooperative operation. A good cooperative organization is a fine field for the development of student leadership and requires teamwork and participation by all members. On the other hand, student cooperatives often lack direction and continuity of management. Unless properly supervised, they can present housekeeping problems and food service and sanitation headaches. Safeguards had to be developed. The following is the plan devised.

1. A faculty committee, together with members of the division of residence halls staff, advises on problems of operation and the social and educational program of the houses. It also acts as an appeal board and approves rates and budgets.

2. Two nonprofit, nonstock cooperatives have been set up under the laws of Wisconsin. The faculty committee formed the first board of directors, but soon after the houses opened a new board, for each house, composed of three residents and two faculty members, was elected.

3. The university, acting as landlord, leases the houses to the cooperatives. Leases are made for the academic year, and rents are sufficient to cover the annual amortization of the outstanding debt on a 3 per cent, 30 year basis, a building repair fund for major repairs of 1 per cent of the value of the building, an equipment replacement reserve of 6 per cent of the value of furnishings and equipment, and fire and extended coverage insurance.

4. The university assigns the residents to the houses. Assignments are made through the scholarship office. Criteria are financial need, probable contribution to the success of a cooperative living group, and scholarship. Assignments to rooms, management and the actual operation of the houses are the responsibilities of the cooperatives and their directors.

5. Housemother-managers are selected by the faculty committee and are paid a salary, set by the faculty committee, which is in line with similar jobs in sororities or fraternities. This eliminates the possible objections of a housemother being directly responsible to a group of students.

6. Bookkeeping and financial records are kept under the supervision of the student financial adviser.

7. The cooperatives are responsible for all minor building and equipment repairs, including interior painting, although the university provides the paint. An inventory of equipment is maintained, and an accounting is made at the end of each year so the houses are completely equipped for the following year.

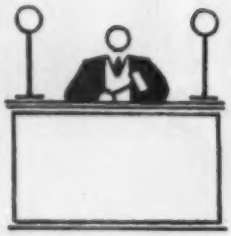
8. The university has attempted to give as much autonomy to the student organizations as possible.

At the end of the first year's operation the report showed a saving of about 10 per cent under the budgeted cost, which was refunded to the residents. Table 2 indicates the budgeted cost of operation for 1956-57. The first year of operation was a trying time until equitable work schedules were devised and operations settled down. In general, however, the houses had a good year, and the high point was the dedication of the houses and the official naming, Zoe Bayliss House for women and David Schreiner House for men. Grades were good, with Zoe Bayliss House boasting an almost straight B average and David Schreiner House not far behind. Almost 100 per cent of the residents requested to be reassigned.

The two "pilot houses" in one short year proved successful. Whether the university will be able to expand this type of student housing depends largely on additional finances.

Our cooperative program at Wisconsin is not intended to supplant the regular residence hall program but to augment it with a program for the needier students. The greatest saving to students is in board and room. Future plans likely will include dining facilities for most houses, although there will be some "room only" facilities for the men with meal jobs.

Should Housing for Married Students Be Taxed?



T. E. BLACKWELL

Educational Management Consultant
Washington University, St. Louis

IT WOULD BE UNFORTUNATE FOR higher education if other jurisdictions should follow the lead of the city of Berkeley, Calif., in its recent attempt to tax the dormitories for married students of the Pacific School of Religion. In a letter dated Oct. 22, 1956, an officer of that institution reported that the judgment of the county superior court, upholding the assessment on two of its residence halls housing married students, would be appealed to the district court.

The Pacific School of Religion, a nonprofit corporation, was established in 1867 as a theological seminary. After World War II, like many other educational institutions, it found it essential to provide housing for its many married students. The constitution of the state of California provides that:[1] "Any educational institution of college grade, within the State of California, not conducted for profit, shall hold exempt from taxation its buildings and equipment; its grounds within which its buildings are located, not exceeding 100 acres in area; its securities and income used exclusively for purposes of education."

KEY WORDS

The key words in this constitutional provision are, of course, "used exclusively for purposes of education." The city of Berkeley and the county of Alameda contend that the housing of married students and their families is not an educational function. They agree that the housing of unmarried students is a well established and traditional responsibility of higher education, but they are not willing to concede that married students are entitled to the same privilege. Apparently, they take the position that a young man, after acquiring the responsibilities of a wife and family, should no longer expect society to provide him with tax free, subsidized housing.

FIRST RECORDED CASE

The first recorded case[2] in this country to deal with the problem of the taxation of college residence halls involved the attempt, in 1899, of the town of New Haven to assess the dining halls and dormitories of Yale University. The court, in its opinion upholding the tax exempt status of such facilities, traced the history of the English college and university from the year 1200, and emphasized the importance of student housing as an essential facility in the total educative process.

This ruling of the Connecticut court has been followed by the courts of Massachusetts,[3] Illinois[4] and New York.[5] In fact, it is the general rule in this country.

The Pacific School of Religion, in its brief filed with the district court of appeal,[6] contends that no real or legal distinction can be drawn, for academic reasons, between single and married student housing.

The brief declares:

"The sacred institution of marriage should not cause us to lose our sense of values as they relate to the constitutional exemptions affecting educational institutions, and the needs of a married student should be respected and recognized in the law with equal dignity with that given the unmarried student.

"Before the influx of married veterans to campuses in recent years, colleges and universities did not feel they had much responsibility for housing married students. Recently, however, practically all the large institutions in this country, and many of the small ones as well, have been forced to provide some form of housing for this group of married students; trailer camps, quonset hut villages and barrack communities have become standard expressions of this new type of college life."

The brief cites a recent study[7] prepared for the regents of the University of California in which it is stated that it is now essential to provide adequate housing at reasonable rental rates for married as well as unmarried students. In pleading for a reasonable rather than a strict interpretation of the constitutional exemption clause, the brief cites a New York case[8] involving the tax status of the property of a college of technology. In the opinion of the court:

"Education is declared to be a function of the state. The state may and does delegate its functions in that respect to private corporations under suitable regulations. . . . Thus, school and college properties may be said to receive their rights of tax exemption, not as acts of grace from the sovereign . . . but both upon the principle of nontaxation of public places and as a quid pro quo for the assumption of a portion of the functions of the state. Such a situation calls for a reasonable construction of the exemption statute so as to give full effect to the policy declared."

As the colleges of our country assume more and more diverse duties and functions in this modern era, *i.e.* the

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[1] Article XIII, Section 1a, adopted in 1914.

[2] Yale University *v.* Town of New Haven, 42A. 87 (1899).

[3] President and Fellows of Harvard College *v.* Assessor of Cambridge, 55 N.E. 844 (1900).

[4] City of Chicago *v.* University of Chicago, 81 N.E. 1138 (1907).

[5] In re Syracuse University, 209 N.Y.S. 329 (1925).

[6] Pacific School of Religion *v.* City of Berkeley and County of Alameda, 1 Civil No. 17030.

[7] Re-Study of the Needs of California in Higher Education.

[8] Application of Thomas G. Clarkson Memorial College of Technology, 77 N.Y.S. 2d, 182 (1948).

ownership and management of faculty clubs, parking facilities, little theaters, and flying fields, the pressure to tax such ancillary properties will increase. Cities and counties have their own financial problems in this period of increasing costs and all tax exempt property is under continuous scrutiny.

If the taxation of married student housing has been or is now a problem on your campus, please send me the details. I should like to continue to keep the readers of COLLEGE AND UNIVERSITY BUSINESS informed as to the trend in this direction.

New Light in Old Classrooms

ROY O. KALLENBERGER
Assistant Business Manager, Marquette University, Milwaukee

WE AT MARQUETTE UNIVERSITY CELebrated our 75th anniversary in 1954. This means that our classrooms are in buildings ranging from 50 plus to 3 years old.

As with most schools of higher learning, we are facing budget limitations. In view of this, we must get the most for each dollar we invest in relighting. I use the word "most" with a double connotation. Naturally we want to relight as many classrooms as we can each year; however, we also want to get the most desirable visual atmosphere possible for each dollar spent.

CONSIDER ENTIRE ROOM

There was a time when we measured a lighting system by the number of foot-candles at the working plane. Today, thanks to the work of many men in the illumination field, we consider the entire room if we are to provide a suitable seeing environment for student and teacher.

The two fundamental properties to keep in mind in any lighting system are the quantity of the light and the quality of the light. Insofar as quantity is concerned, these levels are easily obtainable by consulting the "American Standard Practice for School Lighting," a publication sponsored by the Illuminating Engineering Society and the American Institute of Architects.

At Marquette University we have agreed that 30 foot-candles is an adequate quantity for each of our general purpose classrooms. Thirty foot-candles is a maintained figure, and our initial design quantity is somewhat higher.

The quality of a lighting system is not so easy to look up in a book or table. Quality is determined basically by the brightness ratios, or the amount of light reflected from the various surfaces in the room. These surfaces are the walls, ceiling, blackboards, floor and the furniture. Room surface reflectances are highly important in maintaining comfortable brightness ratios within the field of view. We at Marquette like to include with each relighting installation a complete paint job and a renovation of the floor in order to keep these brightness ratios within acceptable limits.

In general, the ceiling should have a reflectance of from 80 to 85 per cent, the side walls from 50 to 60 per cent, the floors from 15 to 30 per cent, and the desk or table tops from 35 to 50 per cent. The repainting and floor renovations in keeping with the foregoing figures will result in a very satisfactory installation, as long as proper light fixtures are selected, fixtures that shield the source of light from the users' eyes.

Use of exposed fluorescent lamps is sometimes considered for classrooms because bare lamp fixtures cost less than louvered fixtures and are cheaper to maintain. Everyone knows that bare lamps can be uncomfortable to live with. How uncomfortable? Well, that depends on several factors. Chiefly, their size, position and brightness toward the eye, which is affected in part by the lamp orientation. In general, except for special low brightness installations, bare bulbs should not be used.

In relighting old classrooms, we are immediately faced with the necessity to choose between fluorescent and incandescent lighting.

Fluorescent lighting is indicated where: (1) energy rates are average or above average and annual hours of use are long; (2) most light is wanted for a given wiring capacity, as is the case in old buildings; (3) 35 foot-candles or more are required, and (4) low operating cost is desired.

An incandescent lighting system is indicated where: (1) the energy rates are low and the annual hours of use are relatively few; (2) foot-candle levels are of the order of 35 or lower (higher levels may be objectionable because of heat from the wattage required), and (3) low initial cost and simplicity of maintenance are prime considerations.

CLASSROOMS USED AT NIGHT

We have developed for a particular set of conditions at Marquette the data shown in the graph on page 48, which represents the cost of providing 30 foot-candles for 750 hours per year in a classroom 22 feet by 30 feet. The annual over-all cost is arrived at by means of the formula shown above the graph. In view of the fact that we are paying approximately 2 cents per kilowatt hour for energy in the Milwaukee area, we have been using fluorescent lighting in most of our classroom renovations. Our institution has a comprehensive adult education

From a paper presented at the meeting of the National Association of Physical Plant Administrators, University of Wyoming, Laramie.

program requiring the use of classrooms at night, which further justifies the use of fluorescent equipment.

Enough generalizing! Our problem is to find a simple method so all of us can guide our relighting programs to successful completion without going into an involved electrical engineering design. What, then, are the ABC's of this classroom relighting?

How much light do you need? We have decided to follow the "American Standard Practice for School Lighting" and maintain a level of 30 foot-candles in our average classrooms.

What kind of light do you need? This is the old problem of quality. The light should be free from glare and free from reflected glare caused by walls, desk surfaces and ceiling. The lighting should be free from shadows so that students will not be forced to read and write in their own shadow. The equipment should be easily maintained. Maintenance depends on ease of lamp replacement, how quickly the fixtures collect dirt, and ease of cleaning. In relighting classrooms we survey the existing lighting system, determining the total wattage presently in the room and the number of outlets. We then have our electrician check to see what the maximum wiring capacity is in watts per outlet in the room. In general, we have been able to use the old wiring.

What lighting fixture will meet your requirements? We must now make a decision between fluorescent and incandescent, and the curve as shown on the graph is used for our set of conditions at Marquette. Using the formula, you can plot a similar curve for the conditions at your institution.

How many lighting fixtures will it take? This is a one-two-three procedure:

1. What is your mounting height? The mounting height is the ceiling height, less the over-all suspension length of the fixture, or the height from the floor to the bottom of the light fixture installed. Whenever possible, lighting equipment should be suspended from the ceiling, hanger systems being used so that the ceiling gets some light and the fixtures tend to blend into it.

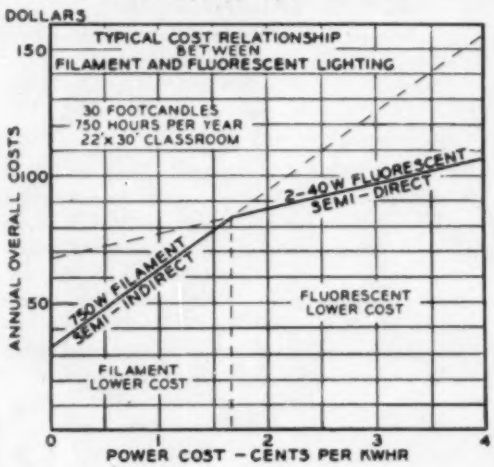
2. What are your room proportions? Rooms can be classified into three general groups: (a) wide (width four or more times mounting height); (b) medium (width two times mounting height), and (c) narrow (width equal to mounting height).

COST OF LIGHT EQUATION

ANNUAL OVER-ALL COST OF A LIGHTING SYSTEM = ANNUAL OWNING COST (Initial cost less lamps multiplied by amortization rate) + ANNUAL OPERATING COST (Cost of energy, lamp replacement and cleaning)

The following chart is illustrative only. It is suggested that the Cost Equation above be used to determine specific comparative over-all cost figures as local conditions will vary widely with regard to:

1. Initial cost of installation.
2. Energy rate.
3. Expected hours of operation.
4. Maintenance considerations.



The next step is to determine how many square feet each fixture cover is expected to light. Using your room proportions, you find the approximate area per luminaire for the desired footcandles as shown in the accompanying table. We can then determine how many lighting fixtures it will take in accordance with the following formula:

$$\text{Number of luminaires} = \frac{\text{Room width} \times \text{room length}}{\text{Area per luminaire}}$$

What lighting plan will do the best job? Here are some recommendations:

1. In spacing between rows, do not exceed 1.2 times the mounting height.

2. Run the direction of the rows of fluorescent lights parallel to the predominating line of sight. This will ensure minimum glare and best appearance.

3. In arranging fixtures, use continuous rows for best appearance and for minimum wiring expense. Luminaire groupings are second only to continuous rows in appearance and minimum wiring expense. They represent the most economical arrangement for medium lighting levels. If we find it necessary to cut the cost to a minimum, we use individually mounted luminaires over the old outlet centers. In general, these rooms have poor appearance and the relatively large number of wiring outlets required for the installation limits their use.

What other factors should be considered? A can of paint and regular cleaning will do wonders for any lighting installation. The classroom that is most popular with students and faculty alike is the one in which light seems to be coming from all directions. There is no "brightest spot" and no "contrasting gloomy" spot.

Is the foregoing a rigorous engineering approach to classroom relighting? I am the first to say that it is not and, when possible, the physical plant department should obtain the services of a qualified illuminating engineer. However, day to day we are faced with

decisions in the lighting field. I question some of the highly theoretical light calculations, and believe the foregoing simple procedure will work, particularly in old classrooms. Classical methods of light calculation are completely inadequate to meet modern needs. The inverse square law and other mathematical relations based on it satisfied Lambert in 1760 and has been copied in all the books down to the present day. The inverse square law, to be sure, is a beautifully simple and direct relation. The only trouble is that it has no bearing on modern room lighting. In the first place, it applies rigorously only to a source that is a mathematical point; by no stretch of the imagination can we consider an 8 foot fluorescent lamp a point. Also, it and all classical methods of calculation assume that light always commits suicide when it hits a surface. Actually, we know that it is very much alive. It bounces off the surface, strikes the ceiling or walls, and is reflected again. Particularly in a modern classroom with its white ceiling and light colored walls and floor, a large proportion of the light we use does not come directly from the luminaires but is a result of interflections among the various room surfaces. These interflections cannot be neglected if the true light distribution, or even a rough approximation to it, is to be calculated. Yet classical treatments ignore interflections.

APPROXIMATE AREA PER LUMINAIRE

Fixture	*Type of Room*	*Non-Working Areas, 20 fc.*	*Average Working Areas, 30 fc.*	*Intense Working Areas, 50 fc.*
Two 40 watt lamps with louvers	WIDE	110	75	45
	MEDIUM	90	60	35
	NARROW	60	40	25
Four 40 watt lamps with louvers	WIDE	200	130	80
	MEDIUM	160	100	60
	NARROW	100	70	40
Two 75 watt slim line with louvers	WIDE	220	150	90
	MEDIUM	170	120	70
	NARROW	110	75	45
Four 75 watt slim line with louvers	WIDE	410	270	160
	MEDIUM	310	210	130
	NARROW	210	140	80
Two 40 watt lamps with plastic covers	WIDE	75	50	NOT
	MEDIUM	55	35	PRACTICAL
	NARROW	35	20	
Four 40 watt lamps with plastic covers	WIDE	150	100	60
	MEDIUM	110	75	45
	NARROW	65	45	25
500 watt lamps, incandescent plastic or glass bowl	WIDE	170	110	65
	MEDIUM	110	75	45
	NARROW	60	30	25
500 watt silvered bowl lamps, incandescent concentric ring	WIDE	160	110	65
	MEDIUM	110	70	45
	NARROW	60	40	25
300 watt lamps, incandescent glass enclosing globes	WIDE	130		
	MEDIUM	100	NOT RECOMMENDED	
	NARROW	65		
500 watt lamps, incandescent glass enclosing globes	WIDE	220		
	MEDIUM	170	NOT RECOMMENDED	
	NARROW	100		

WHAT WE LEARNED

I will mention, in conclusion, a few practical points we learned at Marquette University over the last few years of classroom relighting. In general, we favor the 8 foot de luxe cooled fluorescent lamp. The 8 foot length eliminates one socket and one ballast for each lamp over the 4 foot bulk. Socket maintenance has been a problem, particularly as large numbers of fluorescent fixtures are installed throughout the physical plant. If 8 foot lamps are used, be sure the sockets are not dependent on lamp diameter. They should accommodate both the T-8 and T-12 size. We have also experienced a cheaper cost per linear foot of light fixture using the 8 foot module rather than using a 4 foot fluorescent fixture. Ours is an urban university and the unexplained loss of light bulbs is at a minimum in the 8 foot lengths. To carry an 8 foot fluorescent bulb on a local bus or in one's car is inconvenient!

We have been using a louvered type of fixture but one having no louvers. I have one basic objection to this, and that is the introduction of another new type of bulb to the already growing list of bulbs used throughout our physical plant. Some of the better low brightness fixtures use a T-17 bulb. In using the T-17 type bulb, we have found that the ballast or starting device should be of the same manufacture as the light bulbs. We have experienced some difficulty in bulb operation and the lamp manufacturer blames the ballast manufacturer, and vice versa.

For those of you not familiar with the numbering of fluorescent light bulbs, the procedure is as follows:

The first two numbers indicate the length of the bulb in inches, followed by the letter T which stands for tubular, and another two-digit number. For example, a 96 T-12 bulb would be 96 inches long, tubular in shape and 12/8, or 1½, inches in diameter. A 72 T-8 bulb would be 72 inches long and 1 inch in diameter. We are currently experimenting with using the standard 96 T-12 bulb operated at low current for a low brightness installation.

It might appear that I advocate only the installation of fluorescent lighting fixtures. This is not the case, and there should be no doubt in anyone's mind that an adequate illumination job, both from the quantity and quality point of view, can be done with incandescent light bulbs.

The use of concentric ring fixtures with silver bowl lamps or of other semi-indirect lighting fixtures using incandescent light sources provides very satisfactory illumination. It is only that in my experience with older buildings at Marquette University, fluorescent lighting has proved economical for our given set of conditions.

Steps Toward an Internal Audit Program

1. **Set up an organization chart, to include system of internal control.**
2. **Study the definition of internal auditing.**
3. **Review the college's need for such program.**
4. **Determine staff or individual time to be allotted to it.**
5. **Prepare the internal audit program.**

G. E. GERE
Assistant Controller, Carnegie Institute of Technology

"INTERNAL AUDITING" CANNOT BE discussed intelligently without first defining "internal control." Internal control is defined as follows by the American Institute of Accountants in the special report of the committee on auditing procedure that was dated in 1949:

"Internal control comprises the plan of organization and all of the coordinate methods and measures adopted within a business to safeguard its assets, check the accuracy and reliability of its accounting data, promote operational efficiency, and encourage adherence to prescribed managerial policies."

The college business officer's responsibility begins with an installation of the proper internal control procedures, but the business office must continue to be constantly on guard to determine that the prescribed procedures are being carried out, that they do not become inadequate or obsolete. If they do not work they should be changed promptly.

DEFINES CONTROL AND AUDITING

An explanation of internal control and internal auditing is given by B. J. Belda, resident partner, Ernst and Ernst, Pittsburgh: "Internal control is a system involving the organization of personnel and work flow to provide that the efforts or work of every individual having significant responsibility are, by the nature of the established system, subject to review and check by another person. This concept may involve not only areas of financial accounting but may be applied also to many other phases of human endeavor. Perhaps, one of the most outstanding examples of a 'system of internal control' may be found in the Constitution of the United States. You will recall that the protection of our liberties is closely associated with the operation of the executive, legislative and judicial branches of the government. In this fashion, the people of our republic are assured of a constant check of each branch by another branch.

"Internal auditing is a supplement to internal control and is used primarily as a means to determine that the system of internal control, which provides for the automatic check of transactions, is properly functioning. Also, the internal auditing concept should be directed to those areas where, for practical reasons, the system of internal control may be somewhat weak."

The audit needs for a college should be determined before a program is developed. The size, financial organization, accounting system, and degree of public accounting audit are among the factors to be considered. The size of the auditing department needed to carry on the program also is limited by the particular local situation. The program, it should be remembered, is *not* a line operation. The internal auditor should be able to study the operation and procedure in a detached or impartial manner as an independent agent.

Like the state police car on the road ahead, the presence of an internal auditor calls attention to the fact that steps are being taken to protect school property. The internal audit is preventive. Also, fraud, error or mismanagement can be discovered before they have had an opportunity to develop or to become extensive. The internal auditor, from the positive view, produces reliable accounting information and strengthens the security of school assets.

It has been said that education is a continuing process. Perhaps an examination of what has occurred in some of our colleges through fraud and falsification may add to this process. Though it is recognized that audit cannot detect all frauds in their beginnings, or even disclose an isolated case, management must constantly be on the alert.

CASE A

Controller Pincher, deciding that he would take some of the school funds, asked the bookkeeper to write large checks for such purposes as payment to construction contractors and others. He did not support these requests by invoice or otherwise, except by a memorandum. When a check was given to him, he signed it, wrote the name of the school on the back for endorsement, and asked the college's bank to cash it. He explained that he was handling the transaction on a cash basis directly with the contractor. All that Controller Pincher needed to do was to pocket the money after cashing the check.

Solution: A second person auditing the payment, including the verification of the proper supporting invoice, could prevent the fraud. Checks in payment of debts should be sent by mail or given directly to the payee. Such a deliberate act would be discovered promptly by audit of the

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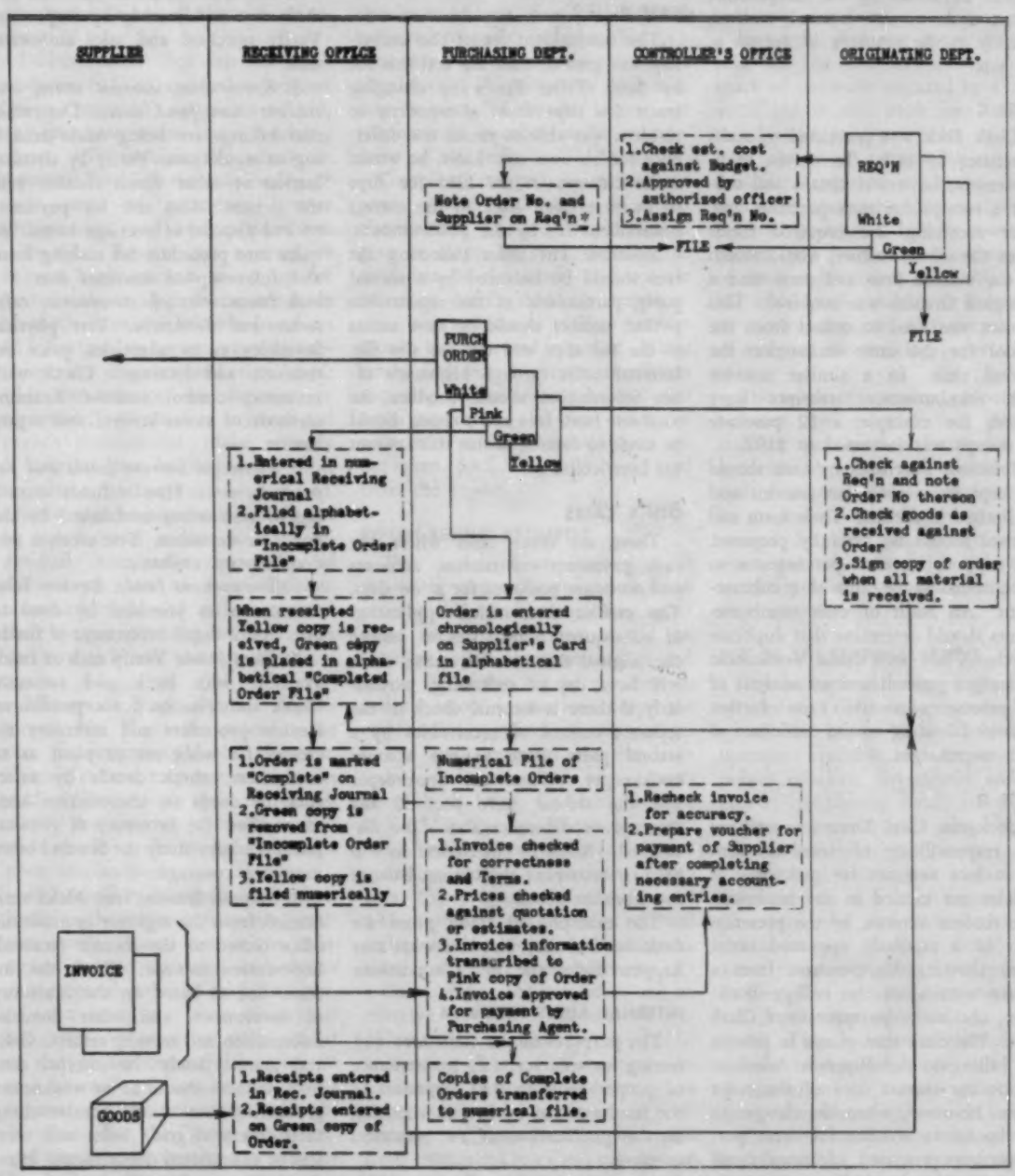
From a paper presented before a work-study conference, Eastern Association of College and University Business Officers, New York City.

Outline of Procurement Procedure at Carnegie Institute of Technology



* 1. Knowledge of prevailing prices and best sources of supply are used when determining supplier for most expendable items.
2. Government Sources, such as Federal Supply Schedules, are frequently consulted.
3. For items of capital equipment, written bids are required where the estimated cost is $1,000 or greater. When the item is estimated to cost less than $1,000, prices from two or more suppliers are obtained except in cases where a specific product of a particular manufacturer is specified.

proper supporting data and correct endorsement upon the check.

CASE B

Foreman Bully continued to put through time cards for employes in his department who had been discharged. He also received the pay checks after they had been prepared by the payroll department. By forging the names of the employes on the pay checks and keeping the funds after cashing the checks, he was able to complete his stealing.

Solution: Verification of time cards as to employes and periods of em-

ployment should be made by the plant office. Distribution of pay checks should be made by an independent party, such as an internal auditor, directly to the employe in person at his job.

CASE C

Clerk Slick was permitted to make purchases by cash. To obtain reimbursement, he would obtain and submit a receipt for each purchase and, after receiving the required funds from the school cashier, would return to the outside firm and state that a receipted invoice was required. This invoice was used to collect from the school for the same transaction the second time. In a similar manner cash reimbursement receipts were raised; for example, a $2 purchase of stamps was increased to $102.

Solution: Purchases by cash should be kept to a minimum amount and be limited in number. Their form and control should be carefully prepared. All support for cash purchases is to be canceled at the time of reimbursement. An audit of cash reimbursements should determine that duplicate purchases had been made. Verification of budget controls and an analysis of disbursements should raise further questions leading to the disclosure of such overcharges.

CASE D

Bookstore Clerk Doer was assigned the responsibility of reimbursement to student veterans for purchases of articles not carried in the bookstore. The student veteran, by the presentation of a regularly approved order form showing his purchase from a source outside of the college bookstore, obtained repayment from Clerk Doer. The clerk then placed in process for billing to the Veterans Administration the correct copy of the order form. However, when the charges to the bookstore account for these purchases were processed, additional items were listed and this increase in the total on the order form was taken from the bookstore cash by Clerk Doer.

Solution: All copies of the order form for both the charge to the Veterans Administration and the charge to bookstore purchases must be processed together. Internal check requires authorization for reimbursement made by one party with payment to be made by a second. Audit of bookstore purchases against charges to the Veterans Administration would disclose any differences.

CASE E

The nonresident fee of the university was greater than the resident fee by $100. Teller Eraser by changing many fee slips from nonresident to resident was able to retain the difference for his own use. Later, he would make changes in the filed fee slips to increase them back to the correct nonresident fee by the $100 amount.

Solution: The teller collecting the fees should be balanced by a second party, particularly at the registration period; neither should he have access to the fee slips and the fee slip file. Internal audit through registrar's office information should produce the total due from fees and a check should be made to determine that this amount has been collected.

OTHER CASES

There are other cases where the cash payments on student accounts and notes are pocketed for a few days. The cashier then makes application of subsequent remittances to restore the original amount. Of course, there will be a day of reckoning, particularly if there is internal check or the separate control of receivables by a second party, such as the account bookkeeper. When the bookkeeper and the debtor have contact, any shortage or difference should be discovered. Audit by circularization will help to determine the correct balance due from the debtor.

The examples of fraud given are fictitious, but they illustrate what may happen under the given conditions.

INTERNAL AUDIT PROGRAM

The purposes of the audit are: (1) testing for accuracy; (2) maintenance of proper controls; (3) appraisal of the results of the work; (4) checking on the qualifications of the personnel involved.

An outline of an audit program is presented as a basis for beginning such an undertaking. Not intended to be all-inclusive, it should present some idea of the work that may be undertaken by a college business auditor.

1. *Cash and fund verification.* Actually count cash and reconcile with bank and control accounts based on cash or supporting data. Use surprise and unannounced checks for imprest cash and separate bank accounts. Use control by prenumbered receipt forms and by cash registers and their totals.

2. *Investments.* Check securities and their care and custody by inspection. Verify purchase and sales authorization.

3. *Receivables, current notes, and student loan fund notes.* Determine that billings are being made according to regulations. Verify by circularization or other direct contact with the debtor. Also test for payments on and disposal of over-age items. Inquire into procedure for making loans and follow-up of amounts due.

4. *Inventories of storerooms, cafeterias and bookstore.* Test physical inventory as to quantities, price extensions, and footings. Check with inventory control account. Examine methods of stores control and organization.

5. *Restricted current funds and deposit accounts.* Handle funds according to restrictions established by the donor or depositor. Test receipts and documentary evidence.

6. *Endowment funds.* Review fund restrictions as provided by deed of gift. Audit detail investment of funds.

7. *Plant funds.* Verify cash or funds available with bank and accounts. Check authorization for expenditures. Review procedure and inventory increases for additions to plant as to correctness; check details by reference to deeds or construction contracts. Test the inventory of physical plant. Perhaps study the fire and other insurance coverage.

8. *Income.* Student fees: Make verification from the registrar or academic office record to the income received. Endowment income: Check the income due as based on the inventory of investments and other financial information and security returns. Gifts and grants: Study the internal controls, as there should be *no* weaknesses preventing these funds from reaching their intended goal. Sales and services of educational departments: Handle billing and collection of such items or delegate this work; with periodic tests or otherwise, maintain this procedure. See that all mail remittances or gifts for the entire school are received at one location.

9. *Expenditures.* Have in effect an over-all budget control of all expenditures. Administration is to be by the department head or dean for the budget, contract or restricted fund account as maintained by the accounting department, with expenditure for

articles or payroll to be initiated in the department office. A review of financial procedures of the various departments is one of the audit functions.

Disbursements: See that the audit produces (1) requisition or request for purchase; (2) quotation or bid; (3) purchase order; (4) receiving report; (5) invoice; (6) check in payment. Establish the relationship of these steps of procedure, proper authorization, and budget provision.

Payrolls: Review the separate or imprest bank account as set up for payroll only, as all payments are made by check from this account based on (1) budget authorization; (2) appointment, contract and time card; (3) authorization by superior or supervisor; (4) check in payment and payee's endorsement. Make a study of original data before, at the time, or after the payroll is prepared. Checks may be separately distributed by the internal auditor to each individual. Also make verifications of deductions, such as hospitalization, taxes, insurance and retirement, and their proper payment, as well as a check of sick and vacation allowance pay.

Library or other separate departments: Use the same procedure as that for accounts payable. However, internal control may rest with checks made by individuals upon individuals within the separate unit rather than with checks made by different units upon one another.

10. *Auxiliary enterprises and others.* Examine bookstores, hospitals, summer camps, alumni associations, cafeterias, athletic activities, and others as segregated activities with the same, or even more, care than educational activities. An intensive audit similar to that of any commercial enterprise may be made. Of course, the proper internal control procedures must be in effect. Use the "gross profit test" and check by occupancy and capacity for income. Inventory, accounts payable, payroll and other tests are necessary for expense verification. Each enterprise may have a single separate and complete audit.

GENERAL NOTES

The auditor always should keep in mind any weaknesses or changes to be made in systems or procedures, and he should make sufficient objective test checks of selected details, investigating them from inception to final culmination. He should supplement any checking or verification by additional study of the correct business operation of the particular activity subjected to audit, in order that (1) time may be saved and the procedures simplified; (2) protection and help may be provided for the honest and efficient staff member in the arrangement of his work.

Complete, comprehensive working papers should be drawn up in a concise manner. The audit report should give its scope, be brief, describe the condition of the work, and contain no more details than are necessary. Criticisms and means of improvement should be presented together. Minor errors and less important conditions requiring correction may be discussed with supervisors at the point of occurrence without formal action being taken. Such items may be omitted from the report.

REPORT RESULTS PROMPTLY

The results of an internal audit should be reported and acted upon promptly. Actions as to follow-up of more serious conditions should be listed as report recommendations and should be carried out by the internal auditor upon instructions from the chief business officer of the college.

The audit program for the large university, summarized on a functional basis by S. C. Smith, auditor of the University of Illinois, suggests: "(1) verification of financial and operating data; (2) analysis of records; (3) protection of school assets; (4) prevention and detection of fraud and error; (5) appraisals of all operations as to costs and effectiveness; (6) a clearinghouse for new ideas and an effective coordinator of over-all procedures; (7) assistance to public accounting firm; (8) training departmental personnel and acting as a personnel training center; (9) reporting to management deviations from established rules and regulations; (10) direct service to management on special projects."

The internal auditor and the public accountant who does the annual audit may be of aid to each other, since in the broader sense they have the same goal. The internal auditor working from day to day seeks correct and accurate financial data and sees to it that system and controls are proper to produce these results. The public accountant's interest is to see that the statements of financial condition and results of operations are fairly stated in accordance with generally accepted accounting principles, applied on a consistent basis.

By careful planning it may be possible for the internal auditor to do much of the work required by annual audit and fit this work into the internal audit program. Some of these steps are: (1) preparation of confirmation requests to banks, fiscal agents or customers; (2) analysis of deferred or accrued balance sheet accounts; (3) independent confirmation of notes and accounts receivable; (4) aid with detail checking or balancing to control accounts; (5) preparation of many of the working paper schedules.

The result of complete cooperation between the external and internal auditors may mean a better job for less cost. A sound and effective system of internal control, supplemented by an internal auditing program, reviewed by the outside accountant, often permits substantial reductions in the public accountant's scope of investigation.

USE OF THE INTERNAL AUDIT

The business manager of the small or medium sized college makes use of all the means of good business operation available, such as personnel, public relations, investment and, of course, purchasing and accounting technics. Internal audit also may be of use and have application in the small school, although it may not be formalized as in a large organization. The protective and constructive appraisal of this function should have some recognition, for there is much to be gained by having someone who can do this type of work.

All of the technics mentioned here cannot be applied, since this work is specialized in character. But if it is not feasible to appoint an individual to perform this function, perhaps an accountant taking time from accounting statements and other work may make some imprest cash verifications, audit some of the important auxiliary activities, or carry on some of the other tasks of the internal audit department. He, together with the business manager, should review the entire accounting operation and the internal control of the college. A surprise audit by the college's C.P.A. with an appearance at a time other than at the close of the fiscal year also may prove to be of value.

No backtracking of employes,

food or patrons in this

Student Hangout at K.U.

FRANK BURGE
Director, Student Union, University of Kansas, Lawrence

AT KANSAS UNIVERSITY A RESTAURANT operation called the Hawk's Nest (named after the school's "Jayhawk") is the student hangout from 7:30 a.m. until 11:00 p.m. daily. Business has been excellent for the last three years, which leads the management to believe that the correct merchandising policy is in effect. The type of service, speed and turnover, menu selection, house specialties, carry-out service, atmosphere (color, design, music) were considered fundamentally important in planning this project.

In order to provide for constantly increasing enrollment and to ensure a sound operation economically, much attention was given to the best possible use of dining room space and to planning a highly efficient food production and service area. After three years of careful record keeping we had determined from menu analysis the quantities of each kind of food to be produced. Sales area on the counter was allocated accordingly.

In a college union building there is always the problem of being able to serve the great crowds on peak days effectively and yet being able to operate efficiently and economically during normal periods. An operation that would stand the tremendous pressure of Homecoming crowds and other special events and yet could quickly be restored to an attractive restaurant was our goal.

Improved service and more efficient work methods were foremost in our minds when it came time to plan in detail the work flow and equipment layout. Generally speaking, we recog-

Below: The Hawk's Nest, where the continuous forward flow principle is employed. COVER PICTURE shows the entrance to the service bar. Thoughtful arrangements provide logical combinations of foods. (Ken White Photographs)

Ralph Heath
SUPERINTENDENT OF SCHOOLS
Yorktown, Indiana

"People often are hoggish about paper towels"

WITHOUT realizing it they'll use from two to four single fold towels just for drying.
— wasting up to 40 inches of towelling.
But you can control this waste.
With savings up to 40%!
How?
*By installing WESTROLL TOWELS in West Micromatic Cabinets.**

PEOPLE quickly unroll as little or as much as they want. But without realizing it they take less. Averaging 17 inches of soft, absorbent WESTROLL.
Saves janitors' time, too.
— one filling of the tamper-proof cabinet equals four of a single fold towel dispenser.
— there's less litter to clean up.
And washrooms are cleaner, neater.
**Cabinets are loaned.*

"Westroll towels cut costs 25%, ended complaints"

"We've made our custodial staff happier and reduced towel costs a good 25% by installing Westroll Towels and Dispensers in our school lavatories and rest rooms," says RALPH HEATH, Superintendent of Schools, Yorktown, Indiana.

"Our janitors no longer complain that the floors are littered with unused sheets of paper towels — a waste that was disturbing to the administration. The building is cleaner. We're all pleased with Westroll."

Would similar results interest you? Send the coupon.

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☐ Please send your free folder on cutting towel costs with Westroll.
☐ Please have a West representative telephone for an appointment.

Name.....

Position.....

Mail this coupon with your letterhead to Dept. 9

LEFT: The flow pattern worked out at the Hawk's Nest provides small "wide spots" for momentary wait for short-order items, which have been ordered through a microphone at the beginning of the line near a menu board.

nized that our restaurant operation was one in which the tasks performed were highly repetitive in nature. Therefore, the continuous forward flow principle was employed. In no case did we want an employe to do any unnecessary moving about to get materials necessary for production. No backtracking was our goal.

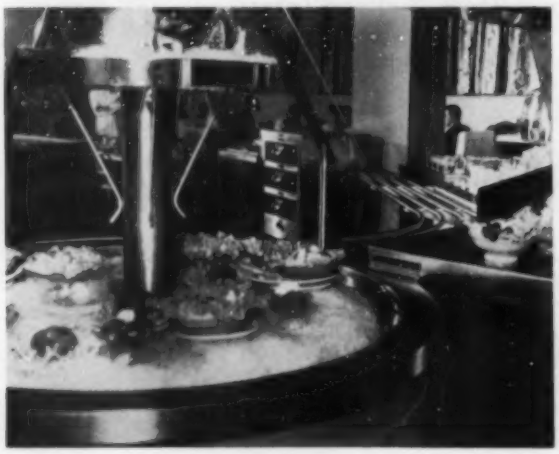
We studied the customer count, ranging from 3000 to 4665 transactions daily (one transaction is often two or three customers). Peak loads dictated that we must be able to handle at least 15 transactions per minute at the class breaks, which occur regularly on the hour. The dining area was laid out to make maximum use of available floor space, which results in 440 seats in a 4200 square foot area, including aisle, counter and cashier. This compares favorably with standards prescribed in "Architectural Graphic Standards." Furnishings were kept in modest scale in order to make this arrangement possible.

Flexibility of use was important because of the variable demands occasioned by the university's calendar of events. For example, at Commencement time student usage is very low and there is a heavy demand for parties, banquets and other catering functions. The whole area is so designed that by a simple reversing of customer approach and by placing tablecloths and place settings on tables a handsome dining room with an attractive buffet service results.

We were anxious to have an area that would be attractive, gay and full of collegiate atmosphere, yet lend itself to a sophisticated arrangement. This was not difficult once we had delineated the functions and specified the elements of design. Ken White Associates designed and coordinated this work.

Limited funds were available for the venture so it was necessary to make maximum use of existing furnishings and equipment. It was surprising to see how effectively old furnishings could be made to tie in with a new fabric or a new impervious plastic top. Thirty-three double booths for four were included among these furnishings. These were simple wallboard or pressboard over lumber; they would make comfortable seats but they lacked the attractiveness of a foam rubber upholstered booth. Mr. White specified a sheet of foam rubber bonded to the curved surface and covered with plastics.

Throughout the room accent was on color. Walls and columns were covered with fabrics in colors and textures to complement the booths. The entire wall behind the serving area is done in a soft "café au lait" plastic fabric, which is durable, resists stains, and gives up any soiling with normal cleaning methods. Its quiet background



Left: Salad sales are up 54 per cent over a year ago, largely because of this revolving lazy susan full of salads.

Steelcase Custom Line... filling a special administrative need.

New STEELCASE CUSTOM LINE... an old friend of the family

In the past, chief business officers, deans and college presidents too, have expressed a desire for a distinctive type of furniture which could be used for private offices . . . for that "special wing" in the new building . . . furniture which, while significantly different, would still be in harmony with design and construction of their present equipment.

The Steelcase answer is its new Custom Line. Here is office furniture styling, beauty, convenience and efficiency conceived in a new and refreshing manner. Yet, if you take a second look, it is distinctively Steelcase. It has the same design continuity which makes it the perfect tie-in for your standardization program.

See the Custom Line soon. You will want to make it a supplementary part of your continuing program of office expansion and you will immediately understand why we say the new Custom Line . . . is an old friend of the family.

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is good for displaying food items, leaving their natural color to provide eye appeal. On the wall behind the serving counter spaced regularly among black menu boards are replicas of authentic butter molds used in early Kansas days.

At the peak business hours the customers have four choices of service. Those who want soda fountain items form a fast moving line to the right side of the dining area. Others, at the entrance to the service bar, are stimulated through proper displays to a high degree of impulse buying. At this critical point, groups of customers divide into three lines for the three most logical food combinations and move, just as rapidly as they choose, to a selection from the attractively displayed food items. Thoughtful arrangements provide logical combinations of foods under these conditions of rapid traffic flow and result in a high degree of customer satisfaction and a high average check for a class break—21 cents over-all. We are eager to increase the average check in this operation, as it is difficult to make money on coffee alone.

We think that in this type of operation the customer enjoys the privilege of "doubling the line" or making a selection from a variety that will give him individual yet quick service.

Careful thought was given to the use of the microphone for short orders in this arrangement. The microphone was placed at the very beginning of the line in close proximity to a menu board and is accompanied by brief, clear instructions for use. Short-order food production is so coordinated that in a majority of cases the hot item is available just at the time the customer arrives at the strategic point where the eye appeal of our revolving lazy susan full of salads takes over. Salad sales are up 54 per cent over a year ago.

If the short-order item takes a bit longer—such as pizza pie—a small "wide spot in the road" has been provided for this momentary wait. We are finding this most satisfactory and that wait is reduced considerably by having the order telephoned ahead on the mike. A customer selects a salad and then quickly moves along to the hot food counter for a complete meal.

These individuals again join their party, and it seems that they are all served at about the same time—resulting in a continuous flow of customers averaging 15 per minute.

At noontime when more complete meal items are sold, we serve 10 to 11 customers per minute. At other times we average 15 customers per minute.

Pizza has been featured as a specialty on certain occasions, with promotional fanfare and conversion of a portion of the dining room into a small night club with checkered tablecloths, candles in bottles, and an Italian atmosphere. Regular production and sale of pizza on Wednesday, Friday and Sunday nights attract about 125 customers.

Every Wednesday night a portion of the dining area known as the Trail Room is converted into a dance area. Furnishings and décor are such that a clearly outlined dance floor becomes obvious and built-in lighting equipment converts the area to a night club. Occasionally small combos are engaged; otherwise recorded music is used. This serves as a business stimulant at what might otherwise be a slow period businesswise.

We are certain that this operating area of the union building is doing much to establish and perpetrate a tradition of Jayhawkers using the Hawk's Nest for their leisure hours.

NEWS

Business Sets Record in College Aid . . . Rise of 50 to 100 per Cent in Tuition Rates . . . College Enrollments at Peak . . . Fire Destroys Tuskegee Chapel . . . Gifts to Higher Education Reach All-Time High

Record $100 Million Given in College Aid by Business, Industry

PHILADELPHIA.—At the annual meeting of the Association of American Colleges in this city, Dr. Frank H. Sparks, former president of Wabash College, Crawfordsville, Ind., reported that business and industry gave a record total of $100 million to American institutions of higher education last year. This amount represents a 400 per cent increase during the last five years. Corporations are expected to give even more during 1957.

In submitting the report to the 650 college presidents and deans attending the three-day meeting, Dr. Sparks declared that 455 college presidents had called upon 20,000 corporations, seeking funds for higher education.

"If our great dual system of higher education survives," said Dr. Sparks, "if federal intervention is prevented and federal subsidy of our privately financed colleges and universities is avoided, credit in no small degree will be due to this courageous, tireless, determined little task force of fighters for freedom."

In a series of resolutions at the association meeting, the delegates pledged support for Hungarian refugees in this country. The college executives agreed to provide scholarships for the Hungarian students and to find places on their faculties for the teachers. From 1500 to 2000 refugee students will need places on American college campuses this year. Another resolution requested that the federal government offer financial assistance for Hungarian refugee students comparable to the China aid program.

President J. Ollie Edmunds of John B. Stetson University, DeLand, Fla., was elected president of the association. Also elected were: vice president, William W. Whitehouse, president of Albion College, Albion, Mich.; treasurer, George M. Modlin, president of the University of Richmond, Richmond, Va.; executive director, Theodore A. Distler, former president of Franklin & Marshall College, Lancaster, Pa., and member of the board, Courtney C. Smith, president of Swarthmore College, Swarthmore, Pa.

J. Ollie Edmunds (left) and Arthur G. Coons, new president and retiring president of Association of American Colleges.

In assuming the presidency, Dr. Edmunds succeeded Dr. Arthur G. Coons, president of Occidental College, Los Angeles.

Nebraska Wesleyan Opens Diamond Jubilee Drive

LINCOLN, NEB.—Nebraska Wesleyan University recently announced a 16 year program of development with a financial goal of $8,375,000.

Chancellor A. Leland Forrest termed the program "ambitious but completely realistic." He said it is based on a careful analysis of Wesleyan's past contributions, present status, and future needs, with "full faith in a continued strong national economy and the zeal of all Americans to see their distinguished colleges grow."

One phase of the program is already under way. This is the $4,300,000 Diamond Jubilee phase, which includes construction of a new campus center and science hall.

Survey Reveals Rise of 50 to 100 per Cent in Tuition in 10 Years

NEW YORK.—A recent survey of 35 colleges and universities across the country by the *New York Times* revealed that rising operating costs have forced many of the institutions to increase their tuition from 50 to 100 per cent in the last 10 years.

Twenty-nine of the 35 institutions have raised their tuition within the last 18 months; 10 will increase charges this year or next. Several have tuition rises under consideration. In the *Times* study, the cost of education met by student tuition at the private institutions ranged from 31 per cent at Duke University to 80 per cent at Smith College and Mount Holyoke. Most institutions reporting revealed that the tuition was either a little above or just below the half-way mark in providing for the cost of education.

Some college administrators reached by the *Times* stated they were hoping that additional financial support might be received from other sources to meet rising costs. They were encouraged by the fact that business and industry had given a record total of $100 million to higher education during the past year. Others believe that part of the answer lies in greater economies in operation. Vanderbilt University is trying to encourage year-round student attendance as a means of cutting the fixed overhead costs of the plant.

Other proposals submitted as a possibility for solving the situation included: federal and state scholarship programs, federal aid for capital needs, increased annual giving by alumni and friends, and stabilization of prices. Many administrators believe the future students must bear a more equitable share of the cost of their education.

Apparently there is a tendency to equate the cost of education with its

Medical Expenses mount up fast

Now, through TIAA's new MAJOR MEDICAL EXPENSE INSURANCE, colleges can help free their staff members from concern over the financial problems of medical care for themselves and their families.

TIAA MAJOR MEDICAL is issued on the Group basis and can be added to a "base plan" such as Blue Cross-Blue Shield or designed to provide the entire medical expense insurance program at the college.

Colleges, universities, independent schools, and certain foundations and other nonprofit educational or research institutions are eligible whether or not they now have a TIAA retirement or insurance program.

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value in terms of students' future income. A spokesman for Syracuse University declared: "Even if tuition should go much higher, higher education will continue to be a phenomenal bargain. Nothing increases earning capacity more surely."

Bank Gives Aid to Employes' Colleges

NEW YORK.—The First National City Bank of New York announced that it was beginning a program of financial aid to privately controlled colleges, universities and technical schools.

The bank will set aside a varying amount each year, based on earnings, from which annual grants may be made to four-year institutions that award degrees. It is expected that $150,000 will be disbursed to 112 institutions this year.

The plan provides that the college of origin of any employe who has been with the bank for five or more years, or of any officer, is eligible to receive grants. The employe must be a graduate of the institution and in the active service of the bank. Allocations this year will be based on 505 graduates of eligible colleges now in the bank's employ, an average of $300 for each person.

Grants in behalf of each graduate will be of equal size and will continue each year during the graduate's active service in the organization. They will be unrestricted.

Record 2,947,000 Students Enrolled in Fall Term

WASHINGTON, D.C.—According to enrollment figures released by the U.S. Office of Education in January, a record total of 2,947,000 students were enrolled in colleges and universities in the United States during the fall semester.

Lawrence G. Derthick, commissioner of education, stated that total enrollments, already 10 per cent above last year's previous high, are expected to reach nearly 3,250,000 with additional entries during the mid-year semester.

Highlights of the report reveal that the number of students enrolling for the first time in a college or university reached a record 723,000—representing 7.1 per cent above first-time enrollments in 1955 and 53.2 per cent more than in 1951.

Teachers colleges enrolled 13.5 per cent more than in 1955; technological schools, 13.4 per cent more, and theological schools, 2.3 per cent more. However, theological schools showed a 5.5 per cent decrease in first-time enrollments; technical schools, a 14.4 per cent increase..

According to the U.S. Office of Education, the University of California led the field in total enrollments with 40,788 on all campuses, excluding extension work. The University of Minnesota was second with 36,303.

Tuskegee's Chapel Destroyed by Fire

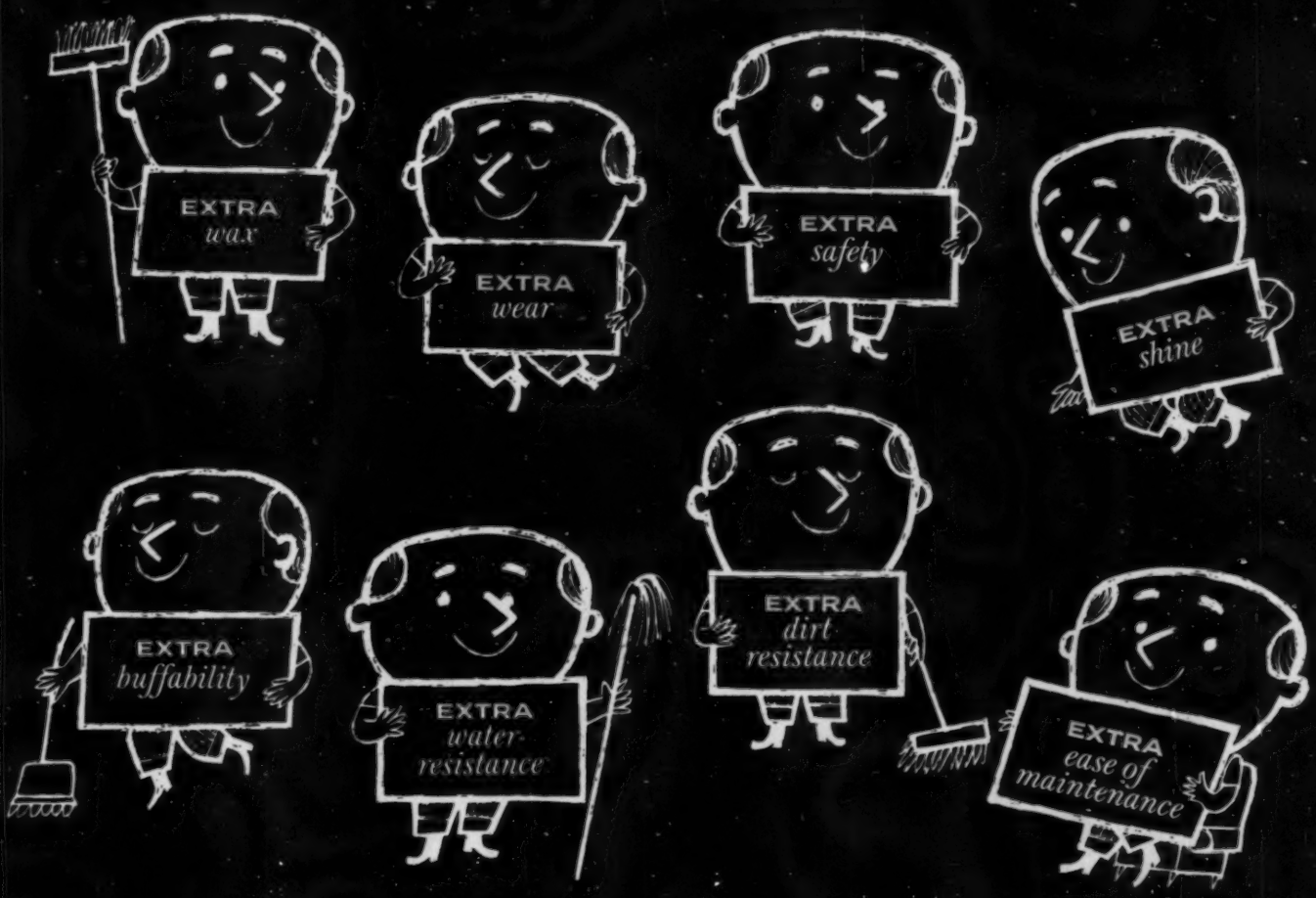
TUSKEGEE, ALA.—A fire, believed to have been started by lightning, destroyed the Tuskegee Institute chapel on January 23. The chapel burned to the ground.

No damage estimate was immediately available. Although the building was covered by insurance, President L. H. Foster said it would be impossible to replace the old timber and the handwork that had gone into it.

In Washington, the Booker T. Washington Centennial Commission

WAXTRA

the Wax with all the Extras



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Waxtra guarantees better looking floors with less work and less cost. Keeps appearance up and upkeep costs down. For a convincing demonstration of all the extra qualities of Waxtra . . . or to place your order . . . phone your local Johnson's Wax distributor today.

For your distributor's name, write: S. C. Johnson & Son, Inc., Maintenance Products Department CUB 27, Racine, Wisconsin.

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announced it had sent $1000 to Tuskegee to help reconstruct the chapel. Booker T. Washington founded the school.

Alumni Council Aids in Raising Funds for Higher Education

WASHINGTON, D.C. — Recognizing the need for a significant rise in the number of givers and the level of giving to American education, the American Alumni Council has launched an intensified and expanded program of services in support of educational fund raising. Its goal is: "One Million New Givers to American Education."

As a major step in this program, the council last month made initial distribution of two new services to the administrative officers concerned with fund raising in its 770 member universities, colleges and secondary schools in the United States and Canada.

The services, both of which take the form of loose-leaf ring binders, are the "Educational Fund Raising Guide" and the "Educational Fund Raising Manual." The guide is an up-to-date reference file of information fundamental to the work of fund raisers. The manual consists of a series of pamphlets covering each of the major elements of a comprehensive program of educational fund raising.

Through a cooperative arrangement with three other educational associations, more than 1300 university and college presidents are receiving a special president's edition of the E.F.R. Guide, containing the general but not the technical data prepared for this service.

Through a special grant the Sears-Roebuck Foundation provided the binders and index dividers. The intensified and expanded program of the Council has been made possible by the financial assistance and encouragement of the Charles E. Merrill Family Foundation and the Association of American Colleges.

Engineers Still Tops in Beginning Salaries

EAST LANSING, MICH. — Among Michigan State University's 1956 graduates holding bachelor's degrees, engineers commanded the largest average starting salaries—$4535 to $5335—according to Jack Breslin, director of M.S.U.'s placement bureau.

From 927 graduates who responded to a placement bureau survey, the fol-

lowing range of starting salaries, listed by colleges from which the degrees were received, was reported.

Agriculture, $3670 to $6500; business and public service, $3760 to $4849; engineering, $4535 to $5355; home economics, $3697; science and arts, $3633 to $5112; veterinary medicine (medical technology), $4084; education, $3980 to $4225, and communication arts, $3687 to $4044.

While they were at Michigan State, 81 per cent of the graduates earned some portion of their educational expenses, it was reported, and 26 per cent earned more than half of their expenses.

Gifts to Higher Education Reach All-Time High

NEW YORK.—American giving to higher education reached an all-time high in 1955-56, according to the annual survey of the John Price Jones Company, Inc.

Charles A. Anger, chairman of the fund raising firm's executive committee, stated in a preliminary report recently that, in 1955-56, 49 out of the 50 colleges and universities included in the Jones survey received gifts and bequests totaling $206,007,000, a gain of 47.3 per cent over 1955's high of $139,870,000.

Gifts represented $165,912,000 of 1955-56 contributed income, while bequests accounted for $40,095,000.

The study reflects the effect of the large Ford Foundation grants in 1956 on the educational giving pattern. All 42 of the private institutions included in the survey on July 1 received Ford Foundation faculty endowment grants totaling $39,260,000, although only 26 of them received this money in time to be included in the 1955-56 fiscal year. If the Ford money is deducted from their reports there is still a net increase of 31.1 per cent over the previous year for those 26 institutions. On the other hand, if all 41 private colleges and universities (Radcliffe's grant was included with Harvard's) had reported their Ford grants, they would have shown an increase of 59.2 per cent over 1954-55.

The John Price Jones survey, now in its 36th year, reviews the contribution records of 42 privately supported and eight tax supported colleges and universities.

Private institutions include: Antioch, Barnard, Beloit, Bowdoin, Brown, Bryn

Mawr, Bucknell, Carleton, Carnegie, Chicago, Colby, Columbia, Cornell, Dartmouth, Goucher, Hampton Institute, Harvard, Haverford, Hobart and William Smith, Johns Hopkins, Lafayette, Lehigh, Massachusetts Institute of Technology, Middlebury, Mount Holyoke, New York University, Northwestern, Oberlin, Pennsylvania, Princeton, Radcliffe, Smith, Stanford, Stevens Institute, Trinity, Vassar, Wabash, Wellesley, Wesleyan, Western Reserve, Williams and Yale.

The seven reporting state universities are California, Cincinnati, Illinois, Iowa, Minnesota, Ohio State, Rutgers. The eighth state institution, the University of Texas, was unable to send figures in time for the preliminary report.

Miami Men Students Spend More Than Women

OXFORD, OHIO.— Freshman men are the biggest spenders in the million-dollar-plus business which Miami University students bring annually to this college town.

Contrary to general belief, the men students spend more than women students right down the line, and the biggest part of the difference is spent on clothes, which could mean the women show more foresight in preparations at home for the school year.

Not counting university or fraternity room-board payments or any money spent before coming to the campus, Miami's students spend an average of $256 a year in or near Oxford, according to the current issue of *Miami Business Review*, published by Miami's school of business administration.

$100 Million Increase in 1956 Philanthropy

NEW YORK. — American philanthropy is conservatively estimated to have totaled $6.1 billion in 1956, according to the current *Bulletin* of the American Association of Fund-Raising Counsel. Total giving in 1955 was estimated at $6 billion.

"Religious giving in 1956, for all faiths and all purposes, approximated $3,120,878,000, about 10 per cent above the total for 1955," the association states. "New religious construction alone cost $775 million during the year, the bulk of this sum coming from contributions.

"Increased giving to health and welfare, a major area of philanthropy, is indicated by reports of United Funds and Community Chests which forecast total contributions of $378 million, about 12 per cent over last year. Total giving for all health and welfare purposes is estimated at $1,870,000 in 1956.

"Higher education also benefited from the upswing in philanthropy. Reports of alumni funds, an index of giving to higher education, show the total giving to those funds is 18 per cent above 1955. Giving to higher education was officially reported to total $400 million in 1953 and was expected to reach $550 million in 1956, excluding sums given in 1955 but paid in 1956.

"The contributions of individual givers accounted for the greater part of the total American philanthropy, perhaps as much as 70 per cent. Corporate giving, which was reported $494,517,000 in 1953, was apparently well in excess of $550 million in 1956. Foundation giving is estimated to have exceeded $500 million in 1956, excluding payments on the extensive grants for education and hospitals made in 1955."

A THERMOSTAT IN EVERY ROOM

College of Southern Utah solves toughest problem in dormitory heating

NOW THE OCCUPANTS OF EACH ROOM CAN HAVE JUST THE HEAT THEY WANT

Shown above is a wing of the new men's dormitory, which houses 200 students in 50 apartment-type units —four men to each apartment. SelecTemp heating provides room-by-room temperature control.

Dale Nelson, Director of Public Relations, College of Southern Utah reports on SelecTemp:

"Of particular interest was the manner of solving the heating problem. Original plans called for a conventional heating system. However, to thermostatically control the heat of each apartment meant an additional outlay of $14,000.

"This problem was solved by the Iron Fireman Manufacturing Company, with its, at that time, revolutionary new steam heating system—SelecTemp—which placed thermostatic control in each room.

"We think you will be interested in knowing that in addition to installing the SelecTemp system in the men's dormitory, we have also removed the radiators from the Commons Building and the Gymnasium and installed SelecTemp heating there as well."

Iron Fireman SelecTemp saved $14,000 in building costs

Temperature of each room individually controlled

SelecTemp now installed in other buildings

How SelecTemp works. Iron Fireman SelecTemp is a complete heating system, with each room an independent temperature zone. Each room heating unit (with its own built-in thermostat) circulates filtered warm air, heated by low pressure steam supplied through small copper tubing. Both fans and thermostats are non-electric; no wiring required.

SelecTemp room units, only 18" high, are recessed in walls; take no floor space. Heat is steady—temperature and volume of air are automatically modulated according to amount of heat needed.

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Every room a zone

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Court Upholds Officials in Expulsion Suit at University of Alabama

BIRMINGHAM, ALA.—Federal Judge Hobart H. Grooms ruled January 18 that the University of Alabama officials were justified in expelling Mrs. Autherine Lucy Foster.

In July 1955 Judge Grooms had permanently enjoined the university from denying Mrs. Foster admission to the university. Mrs. Foster had filed a contempt of court action against the trustees charging conspiracy by the trustees in denying her admission.

In his January decision, Judge Grooms declined to take into consideration the fact that, in amended motion papers for the contempt action, Mrs. Foster's attorneys had deleted the accusations of conspiracy against the trustees. In his ruling, Judge Grooms stated: "The evidence offered upon this hearing establishes the fact that the charges and statements . . . are baseless and without foundation and fact. The members of the board of trustees are prominent in the professional, business and civic life of this state, and these charges and statements are of a serious nature. They reflect not only upon the individuals but upon the university as well. Under all the evidence the board of trustees was justified in expelling the movant, Autherine Lucy."

Ohio Northern University Receives First "Quality Advancement Grant"

WASHINGTON, D.C.—Ohio Northern University, Ada, on January 28 became the recipient of the first "quality advancement grant" of $25,000 to be made by the American College Fund.

Announcement of the award in the form of an unrestricted grant was made by Theodore A. Distler, executive director of the Association of American Colleges, which administers the fund.

The American College Fund was established last spring to serve as a depository for donations from corporations, foundations and individuals interested in providing assistance to colleges. The "quality advancement" program, launched through an initial grant of the United States Steel Foundation, is designed to aid colleges that need to overcome only minor deficiencies in order to obtain full recogni-

for the toughest floor scrubbing—polishing—stripping jobs

From the moment the new Tornado series 90 whisks across the floor, until the job is complete, floor maintenance is almost child's play. In minutes, floors take on a carefree look . . . rugs do, too!

Series 90 has a powerful, yet quiet, motor that performs smoothly and efficiently. Fingertip controls that reduce worker fatigue. Non-marking, neoprene wheels that give complete movability when needed—self-retracting when in operation. Everything you need in quality and performance can be yours with the new Tornado Series 90. And there's a model to fit your specific need. Have an on-the-job demonstration on your floor or rug today. *Write for bulletin 783.*

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TORNADO 13" LIGHT HEAVYWEIGHT FLOOR MACHINE

Need a lightweight floor machine? Tornado has the answer . . . Model 130. This is the first machine to combine necessary weight to do efficient scrubbing and polishing—yet light enough for complete ease of operation by anyone. Why not have a demonstration now. Perfect for all! *Write for bulletin 763.*

Tornado Floor Machines are guaranteed against mechanical and electrical defects for one year.

See us at the School Show, Atlantic City Auditorium, Atlantic City, February 15-20, Booths 1424-1426

tion by their regional accrediting associations. Upon obtaining full accreditation, worthy schools would be elevated academically and, in many instances, could qualify for eligibility in state or regional college fund raising foundations.

The Association of American Colleges enlisted the services of its affiliated Commission on Colleges and Industry to conduct an intensive survey of the needs of small colleges and to set up a committee to recommend recipients for the grants.

Dr. Frank Sparks, former president of Wabash College and chairman of both the commission and committee, said Ohio Northern was selected because "it gave evidence of excellent administration and noteworthy progress; because its schools of pharmacy, engineering and law already possess full academic accreditation, and because financial assistance would enable Ohio Northern to strengthen and broaden the quality of its college of liberal arts."

Jewish Students Gain in Eastern Schools

WASHINGTON, D.C. — B'nai B'rith, Jewish service organization, stated recently that a "more liberal admissions policy" had led to a 50 per cent increase in Jewish students at Ivy League colleges.

Enrollment of Jewish students at eight "prestige" men's schools rose from 15 to 22.9 per cent of the total enrollment between 1945 and 1955. The schools were Yale, Princeton, Dartmouth, Harvard, Cornell, Columbia, Brown and the University of Pennsylvania. At such women's schools as Bryn Mawr and Vassar, Jewish enrollment increased from 10.4 to 15.8 per cent.

NAMES IN THE NEWS

Alvin L. Lyons, formerly of the American City Bureau, a professional fund raising firm in Chicago, is now director of the office of development at Tulane University, New Orleans. Mr. Lyons' appointment became effective January 1, but he has been serving as acting director since September 1.

James W. Gilloon Jr., director of athletics and physical training at New York University, has been named special representative of the president, **Dr. Carroll V. Newsom.** In the new position he will visit alumni and other groups throughout the country to de-

Why don't you talk to the men at Cumerford about raising the money?

What a feeling—next month, they'll be moving into the new science building, with room to spare!

Wouldn't you like to replace that old lab building —or build those new dormitories that your school so vitally needs?

Why don't **you** talk to the men at Cumerford about raising the money.

Cumerford has had wide experience in institutional fund raising for colleges, universities, hospitals and churches. On capital funds and budget campaigns, Cumerford directors have produced an enviable record. A note or call will bring a representative to you for consultation at no cost to you. Cumerford, Incorporated . . . America's **growing** fund-raising consultants, 912 Baltimore Avenue, Kansas City 5, Missouri. BAltimore 1-4686.

velop close contact between university and community, and to publicize the work of N.Y.U. in educational, research and community service fields. Mr. Gilloon will also continue until June 30 in his athletic post, to which a successor has not been appointed.

Howard S. Curtis, director of public relations at Brown University, Providence, R.I., has been named secretary of the university. He will retain his present responsibilities in addition to the new administrative assignment.

Edison Montgomery, formerly director of personnel and director of organization and methods studies at the University of Pittsburgh, has been named executive assistant to **Walter F. Vieh,**

Edison Montgomery

Leland Deck

assistant chancellor for business affairs at the university. **Leland Deck,** for the last five years director of personnel for the National Science Foundation in Washington, D.C., will succeed Mr. Montgomery as director of personnel.

William G. Thaler, formerly director of personnel of the American Cancer Society, has been named director of personnel, a new office, at New York University. Mr. Thaler is a member of the American Management Association, the New York Personnel Management Association, and the American Society of Training Directors.

William G. Thaler

N. C. Bovee, formerly business manager of Central Michigan College, Mount Pleasant, Mich., has been promoted to vice president in charge of

N. C. Bovee

W. C. Smith

business and finance. **W. C. Smith,** formerly director of the division of field services at the college, is now vice president in charge of public services.

Dr. Joseph Havens, formerly assistant professor of psychology at Wilmington College, Wilmington, Ohio, has accepted a three-year appointment as college counselor at Carleton College, Northfield, Minn. He will go to Carleton in September after teaching two summer terms at Wilmington. At Carleton, he will teach one course each semester in psychology or religion and psychology, but will spend most of his time as a student counselor.

Dr. S. Roy Heath, for the last two years college counselor and associate professor of psychology at Knox College, Galesburg, Ill., will head the University of Pittsburgh's newly organized student counseling center. He will serve on the staff of **Dr. Charles H. Peake,** assistant chancellor for student affairs.

Dr. David H. Morgan, former president of Texas A & M College, has been appointed director of college relations for the Dow Chemical Company. One of his important functions is to encourage industry-education cooperation for the advancement of science and engineering, and to stimulate

Boy... this is comfort!

Samsonite Classroom Furniture

Actual photos taken at Fellrath Jr. H. S., Inkster, Mich.

Compound-Curved Backs and Contour Seats make it more comfortable!

Educators know that comfortable furniture improves a student's attitude towards his school and his studies. Samsonite has designed classroom furniture that offers more comfort than any other! The secret is in the unique compound-curved backs and contour seats—soft, rolling contours that mean less fatigue, less restlessness, and more attention.

But that's not the whole story. Samsonite Classroom Furniture also comes in the richest range of colors available anywhere—designed to brighten every classroom and improve pupil morale.

Write for free 28-page color catalog with full details.

Dr. John English, Supt. of Schools, Inkster, Mich., says: "We chose Samsonite Classroom Furniture because its styling, durability and comfort were in keeping with our modern new school."

Samsonite . . . *strongest . . . lasts longest*

Shwayder Bros., Inc., Classroom Furniture Division, Dept. CU2, Detroit 29, Mich. Also makers of famous Samsonite Luggage, Institutional Seating and Card Tables and Chairs for the Home. Also available in Canada through Samsonite of Canada Ltd. Queens Highway, East, Stratford, Ontario

Don't Forget to Visit the Samsonite Booth #L-2 at the NEA Show, February 15-20 at Atlantic City!

student interest in the various scientific fields.


F. H. Bauer

F. H. Bauer, business manager for the last 16 years at State Teachers College, Slippery Rock, Pa., has been appointed controller of Kent State University, Kent, Ohio. Prior to his appointment at Slippery Rock, he served as business manager of State Teachers College, Mansfield, Pa.

Howard Tench, controller of the University of Arizona, Tucson, recently resigned to become treasurer of the Tucson Realty and Trust Company. Though his resignation took place in December, he is still working on a consulting basis with the university in completing the details of land purchase for campus expansion. **Kenneth R. Murphy** succeeds Mr. Tench as university controller.

Richard Glenn Gettell, chief foreign economist for the Texas Company and consultant to the U. S. Air Force and Office of Defense Management, has been named to the presidency of Mount Holyoke College, South Hadley, Mass. He succeeds **Roswell Gray Ham,** who will retire in June after having served as president of the 120 year old women's college since 1937.

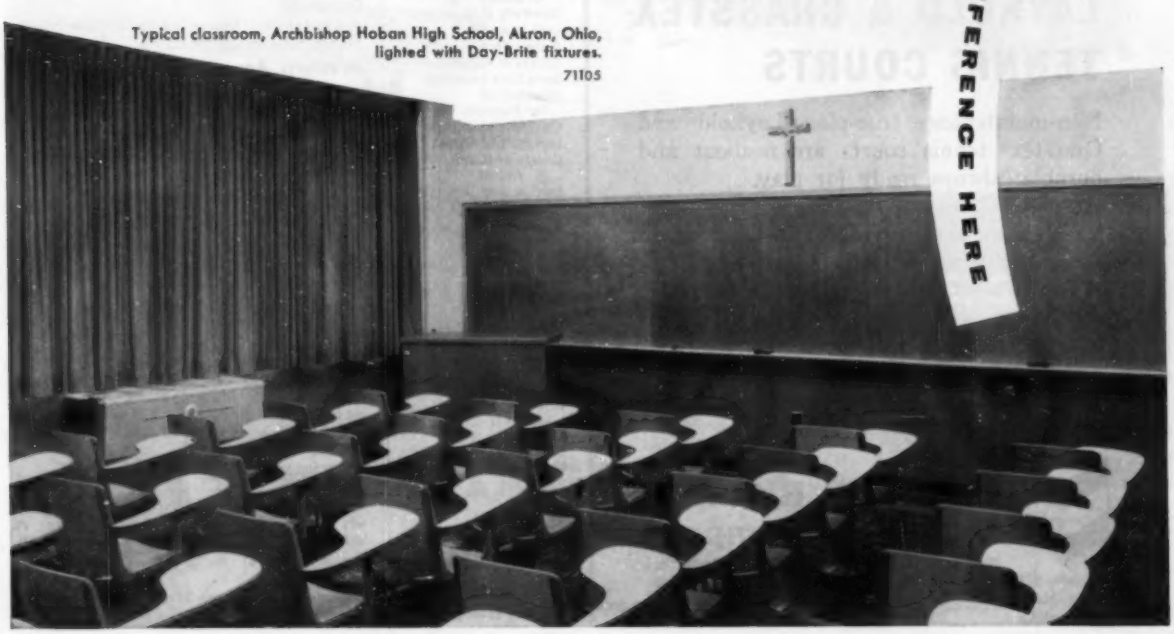
Dr. Harry N. Rivlin, director of teacher education at Queens College, New York City, has been named as head of teacher education for the four city colleges operated by the Board of Higher Education of New York City. He succeeds **Dr. Joseph G. Cohen,** who will go on sabbatical leave in the fall prior to retirement early next year.

Dr. Nathan M. Pusey, president of Harvard University, has been named chairman of the board of trustees of the Carnegie Foundation for the Advancement of Teaching.

Dr. Joseph M. Gray, who had served as chancellor of American University for a period of seven years, died recently of a heart attack at the age of 79.

Dr. Paul S. Bachman, 55, president of the University of Hawaii, died of a heart attack in his home on January 9. He became president in September 1955.

Mother M. Anselma Ruth, president of Molloy Roman Catholic College for Women at Rockville Centre, N.Y., died recently following a brief illness. Her age was 83.



National Federation of College and University Business Officers Associations

President: Nelson A. Wahlstrom; University of Washington; vice president: Thomas E. Blackwell, Washington University, St. Louis; secretary-treasurer: C. H. Wheeler III, University of Richmond.

College and University Personnel Association

President: James N. Ewart, California Institute of Technology; secretary-treasurer: Shelton F. King, Carnegie Institute of Technology; executive secretary: Donald E. Dickason, University of Illinois. Permanent headquarters, 809 S. Wright St., Champaign, Ill.; Kathryn Hansen, editor, C.U.P.A. Journal.

Convention: Aug. 4-7, University of Colorado, Boulder.

National Association of Educational Buyers

President: M. T. Tracht, Illinois Institute of Technology; executive secretary: Bert C. Ahrens, 1461 Franklin Ave., Garden City, N.Y.

Convention: April 30-May 3, Sheraton Gibson Hotel, Cincinnati.

Association of College and University Housing Officers

President: Donald W. Kilbourn, Central Michigan College; secretary-treasurer: Leonard A. Schaadt, University of Michigan.

Convention: Aug. 4-7, Ypsilanti, Mich.

National Association of College Stores

President: Ray Vanderhoef, Iowa Supply Co., Iowa City, Iowa; general manager: Russell Reynolds, Box 58, 33 West College Street, Oberlin, Ohio.

Convention: April 23-27, Sherman Hotel, Chicago.

National Association of Physical Plant Administrators of Universities and Colleges

President: A. F. Gallistel, University of Wisconsin; secretary-treasurer: A. F. Gallistel, University of Wisconsin.

Convention: May 13-15, Temple University, Philadelphia.

Associations of College and University Business Officers

American Association

President: Harold K. Logan, Tuskegee Institute; secretary: B. A. Little, Southern University.

Convention: May 2-4, Hampton Institute, Hampton, Va.

Central Association

President: Roscoe Cate, University of Oklahoma; secretary-treasurer: Ralph Olmsted, Evansville College, Evansville, Ind.

Convention: March 31-April 2, Shamrock Hotel, Houston, Tex.

Eastern Association

President: John Schlegel, Lafayette College; secretary-treasurer: Kurt M. Hertzfeld, University of Rochester.

Southern Association

President: R. K. Shaw, Florida State University; secretary: C. O. Emmerich, Emory University.

Convention: March 14-16, Francis Marion Hotel, Charleston, N.C.

Western Association

President: Glen C. Turner, Colorado State College of Education; secretary: Harry E. Brakebill, San Francisco State College.

Convention: April 21-24, Empress Hotel, Victoria, B.C.

Canadian Association of University Business Officers

President: B. F. Macaulay, University of New Brunswick; secretary-treasurer: F. J. Turner, Carleton College.

American College Public Relations Association

President: Lynn Poole, Johns Hopkins University; executive secretary: W. Noel Johnson, 1785 Massachusetts Ave., Washington, D.C.

Convention: June 24-27, Hotel Fontenelle, Omaha, Neb.

Association of College Unions

President: Earl E. Harper, State University of Iowa; secretary-treasurer: Edgar A. Whiting, Cornell University; editor of publication: Porter Butts, University of Wisconsin.

Convention: March 31-April 3, Hotel Utah, Salt Lake City.

classified advertising

POSITIONS WANTED

Engineer—Experienced in electrical construction, maintenance, design of power and lighting systems, theatre lighting, desires position in physical plant administration of college or university. Write Box CW 323 COLLEGE AND UNIVERSITY BUSINESS.

Food Service Director—Affable, honest, industrious, resourceful; college graduate in food management; varied top hotel and restaurant experience; can guarantee excellent food at moderate cost; currently employed four years as college food director; complete resumé and photograph available. Write Box CW 322 COLLEGE AND UNIVERSITY BUSINESS.

Food Service Director—Successful administrator with diversified experience in large volume commercial and institutional operations. Understand budget control, food and labor costs, purchasing and operating at management level. Write Box CW 317, COLLEGE AND UNIVERSITY BUSINESS.

POSITIONS OPEN

Assistant to Treasurer (Comptroller)—New position in New England liberal arts college for men; excellent opportunity for young man, college graduate, experienced in accounting, budgets, statement preparation, systems work; experience in public accounting or college accounting desirable. Send full details, photo to CO 210, COLLEGE AND UNIVERSITY BUSINESS.

Assistant to Director of Physical Plant—Large southwestern institution; experience in construction and/or general maintenance; retirement, group life and health insurance benefits; starting salary open; send photo and complete details to Box CO. 218, COLLEGE AND UNIVERSITY BUSINESS.

Chief Accountant—Position open in large eastern university for accounting graduate with experience in supervision of accounting and bookkeeping departments and financial reporting; age 25-40; liberal retirement plan, group life insurance, liberal remitted fees program; salary commensurate with experience. Write Box CO 217, COLLEGE AND UNIVERSITY BUSINESS.

Director of Dining Halls and Dormitories—For eastern co-educational liberal arts college in the men's and women's residence halls; send resumé and salary requirements. Write Box CO 216, COLLEGE AND UNIVERSITY BUSINESS.

Food Director—Small girls' college, forty miles from New York City; experienced with knowledge of food purchasing, labor costs, budget control, interviewing and employment of food department personnel; salary commensurate with experience; include resumé of experience. Write Box CO 215, College and University Business.

Food Supervisors—The Pennsylvania State University has some attractive openings in the Department of Food Service; this department operates six dining hall units and a new student union building; the student union houses a modern cafeteria and snack bar both of which serve the public as well as students; banquet and catering services are also provided in the student union; interesting work and excellent opportunities for advancement. Write Employment Division, 304 Old Main Building, The PENNSYLVANIA STATE UNIVERSITY, University Park, State College, Pennsylvania.

Electrical Engineer—$8000, rewarding opportunity for young man in planning large long-range program of physical plant expansion; prefer experience in design of electrical system of school buildings, laboratories or hospitals. Personnel Division, UNIVERSITY OF PITTSBURGH, Pittsburgh 13, Pa.

Superintendent of Buildings and Maintenance—Large, private, well-established, year-round vacation center, within 40 miles of New York City, catering to business and professional people; physical plant program includes air conditioning, refrigeration, swimming pool, numerous fireproof buildings, 1,000 acre estate including private lake; send late photo and details of age, training, experience; excellent permanent opportunity for qualified person. Write Box CO. 214, COLLEGE AND UNIVERSITY BUSINESS.

Superintendent Physical Plant—New England liberal arts private college for men, excellent growing physical plant, has opening for experienced man to head its operating and custodial staff; including responsibility for central steam plant, electrical distribution system, grounds, repair and maintenance of buildings; excellent retirement, group life and health insurance benefits. Send photo and complete details to CO 209 COLLEGE AND UNIVERSITY BUSINESS.

The rates for classified advertisements are: 20 cents a word; minimum charge, $4. (No charge for "key" number.)

Forms close 25th of month preceding date of issue.

COLLEGE AND UNIVERSITY BUSINESS
919 N. Michigan Avenue, Chicago 11, Ill.

WHAT'S NEW

February 1957

Edited by Bessie Covert

TO HELP you get more information quickly on the new products described in this section, we have provided the postage paid card opposite page 96. Circle the key numbers on the card which correspond with the numbers at the close of each description item in which you are interested. COLLEGE and UNIVERSITY BUSINESS will send your requests to the manufacturers. If you wish other product information, just write us and we shall make every effort to supply it.

Mobile Drawer Cabinet Has Nevamar Surfaces Throughout

Nevamar high pressure laminated surfaces are used on the inside as well as

outside surfaces of the No. D-3 Mobile Drawer Cabinet to withstand the wear and tear of school use. Nevamar is an extra hard surfacing material with the beauty and warmth of selected woods and colors. It resists stains, will not crack, craze or peel and may be wiped clean with a damp cloth.

The cabinet rolls easily on four two-inch double rubber casters for use in any desired spot in the classroom. The cabinet is available in 26, 30 and 36 inch heights. **National School Furniture Co., Odenton, Md.**

For more details circle #616 on mailing card.

Water-Emulsion Floor Wax Reduces Rewaxing Frequency

A new Johnson wax called Waxtra is a water-emulsion formula with a high solid content which gives premium performance and reduces rewaxing. Other advantages claimed for Waxtra include more brightness when first applied and after each buffing, longer wear, more slip-retardant properties, greater dirt resistance and absence of streaking. Waxtra is available in five, 30 and 55 gallon drums and is applied in the same manner as other self-polishing floor waxes. **S. C. Johnson & Son, Inc., Racine, Wis.**

For more details circle #617 on mailing card.

Premix Dispensers Are Electrically Cooled

Available in three models, the S & S QuiKold Premix Dispensers are electrically cooled. The manually operated units are portable so that they can be used in cafeterias, lunchrooms, at concession stands at games and in any desired location. The compact dispensers are easy to operate and are available without serving shelf for installation on existing counters for quick service.

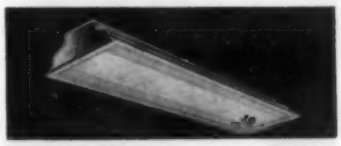
Units are equipped with ⅓ h.p. high volume Copeland refrigeration unit and Heat-X-Changer beverage cooling unit for efficient operation, with a capacity of nine gallons per hour. Models include 8600 E-1 with one draft arm for single flavor; 8600 E-2 with two draft arms for two flavors, and 8600 E-3 with three draft arms for three flavors. **S & S Products, Inc., Lima, Ohio.**

For more details circle #618 on mailing card.

Recessed Lighting Fits Most Ceiling Systems

Shallower 12 and 24-inch fixtures have been designed to be compatible with 63 different ceiling systems. The integrated Day-Brite recessed lighting is intended for acoustical ceilings using exposed runner, exposed panel, exposed grid, concealed mechanical, metal Tee-Bar suspension and conventional plaster ceilings.

Enclosures for the 12-inch fixtures include plastic Cleartex, egg-crate louver, or low-brightness Controlens with trans-



lucent plastic and egg-crate louver, or glass available for the 24-inch fixtures. **Day-Brite Lighting, Inc., 5411 Bulwer Ave., St Louis 7, Mo.**

For more details circle #619 on mailing card.

Hot, Fresh Food From New Appliance

The Fresh-O-Matic by Wear-Ever is a new kind of appliance which heats and freshens baked goods, meats and other foods in three seconds yet occupies a little more than a square foot work area. Cold food is placed on an easy-to-remove tray in the appliance, the cover closed and a handle pressed down. The Fresh-O-Matic pumps tiny jets of dry steam which penetrates foods in seconds thus making a variety of hot dishes available in a short amount of time.

The new appliance also steams clams, poaches eggs, cooks lobster and barbecues spare-ribs. The exterior of the Fresh-O-Matic is textured aluminum. **The Aluminum Cooking Utensil Co., Inc., H & I Div., New Kensington, Pa.**

For more details circle #620 on mailing card.

(Continued on page 82)

Darkening Draperies Have Flame-Resistant Coat

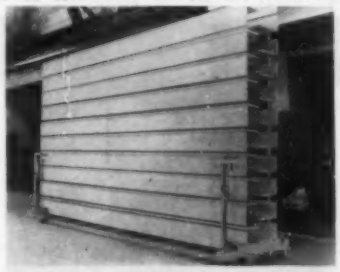
New vinyl-coated fabrics for draperies to darken classroom and auditorium windows are flame-resistant. Designed with color patterns and texture on the inner side, the draperies are of neutral beige on the window side. An intermediate coating of black vinyl ensures opacity. Made of Du Pont "Tontine," the vinyl drapery material has weight and softness for draping gracefully over large expanses of glass and drawing open into minimum space. The new material can be sewn and pleated and can be hung on regular drapery hardware.

The new drapery material offers permanent flame resistance, high resistance to deterioration in tearing, high tensile strength, resistance to discoloration due to fading, darkening or chalking, does not shrink, stretch or get tacky and has a non-porous dry surface which is easily kept clean since dust shakes off. Du Pont "Tontine" darkening drapery is 54 inches wide and is available in a number of patterns. **E. I. du Pont de Nemours & Co., Wilmington, Del.**

For more details circle #621 on mailing card.

Hydraulic Lift Truck for Rolling Gymstands

Wayne Movable Rolling Gymstands are now equipped with a specially designed hydraulic lift truck to permit easier raising and lowering of the gymstand section and safer transportation of the units. The truck, with a three-ton lifting power, need only be slipped under the closed unit and pumped with the hydraulic jack handle to lift even the largest unit. The sudden "let-go" action of raising a gymstand is eliminated with the hydraulic operation. A movable gym-



stand unit is also more easily placed between two fixed gymstands with the greater maneuverability provided by the truck. **Wayne Iron Works, Wayne, Pa.**

For more details circle #622 on mailing card.

What's New . . .

Automatic Action Folds Table and Bench Unit

Known as "Portables of Tomorrow," the new line of Erickson portable Fold-A-Way table and bench combination

units is completely restyled. Automatic hydraulic action simplifies handling of the units in converting multi-use areas for lunchroom or study. When the unit is unlatched, it operates gently, safely and quietly by itself, saving time of custodian or engineer. Chrome steel is used in the fold-a-way understructure redesigned by Brooks Stevens Associates, industrial designers. The new shape simplifies seating with no bench braces to hurdle. The attractive tops, as well as the understructures, are constructed to withstand the rigors of everyday school use.

Each mobile unit provides seating and table space for 24 students. They require minimum space for storage. Ten units, providing seating and eating space for 240 students, occupy only 4½ by 10 feet of storage area. The units are easily moved to place of use or to storage with minimum effort. **Haldeman-Homme Mfg. Co., 2580 University Ave., St. Paul 14, Minn.**

For more details circle #623 on mailing card.

Magic Voice System for Instant, Quiet Paging

Executives, department heads, instructors and service personnel can be paged quietly and quickly with the new Magic Voice System of radio paging. Not a selective system, the paging is heard by all those carrying or wearing the three-ounce transistor induction receiver which is powered by a 350-500-hour life battery. Paging is not heard by students or others without the receiver. The system can be used only for service personnel or for

administrative and professional personnel as well.

Building installation of the necessary antenna is easily accomplished. The main microphone station is set up at the telephone switchboard or in the office, as desired. Additional stations can also be installed in other locations. The Magic Voice System saves time in reaching professional or other persons, is easily installed, inexpensive and efficient in operation. **Master Video Systems, Inc., 37 W. 53rd St., New York 19.**

For more details circle #624 on mailing card.

Motorized Microfilm Reader Has Large Viewing Screen

The improved 16 mm motorized Model PM-1 Recordak Film Reader provides a new 14 inch viewing screen. Electronic controls permit film travel controlled between speeds of one foot per minute for scanning, to a rewinding speed of 600 feet per minute. For slow inspection of film, the electronic controls permit the scanning lever to be locked at any speed desired for continuous inspection. Higher magnifications of 30 and 40 diameters are obtained with accessory interchangeable lenses.

With the wider screen no special scanning mechanism is required for easy

reading of documents. It also shows in full, one face of all documents microfilmed at higher reductions by the duplex or duo methods, while part of the backs of these documents is brought into view, eliminating considerable scanning to check information on the back image. All operating controls are mounted conveniently for the operator and a foot pedal film control is furnished if desired. The new model also has a built-in feature for reproducing paper facsimiles from the projected microfilm images when desired. **Recordak Corporation, 415 Madison Ave., New York 17.**

For more details circle #625 on mailing card.

Compartment Tray of Heavy-Duty Melamine

Designed especially for school lunch service, the new Lunchamp is a deep-compartmented tray of heavy-duty melamine. The compact tray is relatively small in size, yet the deep, proportioned walls give it maximum capacity. The tray is designed to serve a wide variety of meals with the upper right-hand compartment designed to hold a tumbler, milk carton, cup or soup bowl. The rounded corners make the tray easy to

clean and is designed to permit thorough aeration and drainage with level stacking. **Dinnerware Division, Chicago Molded Products Corp., 1020 N. Kolmar Ave., Chicago 51.**

For more details circle #626 on mailing card.

Air Blender System Heats Fresh Outdoor Air

Heated fresh outdoor air is distributed from one central supply source to classroom under-window Air Blender units in the new Air Blender System. Now adapted for school application, the system of heating, ventilating and ventilation cooling is designed to meet all requirements of modern school architecture. Heated recirculated classroom air is blended with tempered air from the central supply unit for classroom heating. The recirculated air is drawn into the Air Blender through a steam or hot water finned-tube heating coil, automatically controlled to raise the temperature of the passing air for proper blending. Effective stand-by heating is supplied without operating fans in shut-down periods.

Ventilating cooling compensates for classroom heat gains due to solar radiation through large window areas. Cooling is limited only by the cooling capacity of the outside air. Addition of a cooling coil and refrigerating cycle at the central supply source provides air conditioning. There are no outside air inlets or fans, filters, motors or electrical wiring in the classrooms. The central

supply unit simplifies maintenance. The **Westinghouse Sturtevant Div., Dept, T-262, 2000 Reachville St., Hyde Park, Boston 36, Mass.**

For more details circle #627 on mailing card.

(Continued on page 84)

is SWEEPING 3 times the job

...it should be?

Have you studied your floor maintenance costs lately? Take, for example, a simple operation like sweeping. Are you just moving dust from one spot to another? The right sweeping tool and the right brush dressing can make all the difference. Remember, 95c of each floor maintenance dollar goes for labor. That's why it pays to call in your nearby Hillyard Maintaineer® for a consultation. He'll carefully study your floor maintenance problems; recommend methods, materials and tools to do the job efficiently—and save you money!

The Hillyard Maintaineer is the man who brings Hillyard experience to your problem. He is "On Your Staff, Not Your Payroll"

FLOOR HILLYARD TREATMENT

ST. JOSEPH, MISSOURI
SAN JOSE, CALIF.
PASSAIC, N. J.

CASE HISTORY—SWEEPING

FILE III

Super Hil-Tone, Hillyard's Non-Oily Dressing, AD-SORBS dust (attracts and holds it by magnetic attraction) first to the floor, then to the brush-- then releases it cleanly when brush is shaken. No old-fashioned "blotter action" to load the brush, leave streaks, cause brush "drag".-- Gives a clean, lustrous floor in a fraction of the time. U/L approved slip-resistant. Non-darkening. Safe for any sealed surface.

SEE IF THE MAINTAINEER CAN HELP YOU!

HILLYARD St. Joseph, Mo.

Yes, I'll take you up! Without charge or obligation, have the Hillyard Maintaineer® show me how to take advantage of new streamlined floor treatment procedures.

Name_____

Institution_____

Address_____

City_____ State_____

What's New . . .

Camera and Flasholder in Integrated Unit

A new 35 mm camera with flasholder as an integrated unit is offered in the Kodak Signet 40 Camera. The versatile miniature camera is especially useful to

colleges for producing their own visual materials or photographic progress reports due to its simple operation. The two interchangeable flash reflectors deliver peak efficiency and the three-inch reflector gives high light distribution with M-2 bulbs, while the four-inch gives maximum light distribution with No. 5 or 25 bulbs.

An exposure guide for use with color or black-and-white film under existing daylight conditions is part of the camera, and the guide, for use of various combinations of flash lamps and films, is part of the flasholder. The camera weighs just one pound and is equipped with Ektanon 46 mm f/3.5 precision lens, lumenized and color-corrected. **Eastman Kodak Co., Rochester 4, N.Y.**

For more details circle #628 on mailing card.

Typewriter Desk Height Quickly Adjustable

The new No. 23511 Automatic Typewriter Desk is quickly and easily adjustable in height from 25 to 30 inches. The typing platform is raised or lowered by a non-removable turn-handle concealed beneath and to the right of the knee space. Desks can be readily changed in height by each pupil to suit his individual height for typing efficiency. When raised to the full 30 inches the platform forms a smooth flat writing

surface with the desk top. The all-wooden desk is of solid birch and maple construction. **Desks of America, Inc., Bridgeport 6, Conn.**

For more details circle #629 on mailing card.

Cooking Equipment Fills Individual Needs

The new line of Garland Heavy-Duty Ranges has been designed to fit the individual needs of institutional kitchens. Range tops for separate cooking and multiple top combination on the 40 and 50 series 6-burner ranges are available in the line. Thus it is possible to combine hot top sections and open burners; griddle sections and open burners or hot top sections and griddle sections. The new ranges are said to reduce the time required to prepare foods and to lower the operating costs.

Other new developments include a broiler with controlled oven below the broiler grid area, front firing, improved installation of high shelf and new black porcelain finish in addition to standard black paint and stainless steel. **Garland Range Div., Welbilt Corp., Maspeth 78, L.I., N.Y.**

For more details circle #630 on mailing card.

Basketball Scoreboard for Any Size Gymnasium

The Naden N-525 Basketball Scoreboard features a 26-inch dial clock and four-inch white numerals to show the

score and team names. The clock is graduated in seconds and minutes and employs a vivid red sweep second hand. Red bulls-eyes indicate playing period and a vibrating horn and red lights automatically indicate the end of play periods.

Actual team names can be inserted in place of "Home" and "Visitors" which fit into the scoreboard on slides. The scoreboard is available with an eight, 10 or 20-minute period clock and is 72 inches long and 28 inches high. **Naden Industries, Webster City, Iowa.**

For more details circle #631 on mailing card.

Hot Cocoa By Adding Water

Carnation's Instant Chocolate Flavored Drink dissolves instantly in hot water to make a rich chocolate flavored cocoa. It may also be added to ice water for a cold chocolate drink. Both drinks have all the milk nutrition and creamy flavor of fresh chocolate drink. The mix is available in three sizes: single serving foil package, a portion control package reconstituting to one gallon, and a 25 pound size. **Carnation Co., 5045 Wilshire Blvd., Los Angeles 36, Calif.**

For more details circle #632 on mailing card.

(Continued on page 86)

Portable Tape Recorder With Realistic Sound

The Bell & Howell portable tape recorder, Model 300-L, features the "Mira-

cle 2000" sound system for realistic sound reproduction. This is achieved by the placement of four speakers — one eight-inch "woofer" on each side and two electrostatic "tweeters" in front. Each electrostatic speaker contains a thousand small apertures which act as miniature loud speakers.

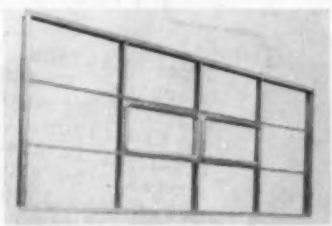
Other features of the portable model include three separate motors to drive the capstan and feed, and take-up mechanism which improves sound fidelity and permits faster winding operations. The unit is built into a fawn and brown scuffproof carrying case, **Bell & Howell Co., 7100 McCormick Rd., Chicago 45.**

For more details circle #633 on mailing card.

Aluminum Window System Features Simple Construction

Simplicity of construction with economy in first cost and installation are features of the new Geyser aluminum bar window system. Narrow muntins give a neat, trim appearance with flat, unornamented exterior surfaces for modern appearance and easy cleaning. The Geyser glazing system leaves no facing putty exposed.

Installation may be made from either the inside or the outside of the structure and permits random spacing of mounting holes in the structure for attachment of subframe. The new Series 7 "Contemporary" design is available in any



size to meet architectural requirements. Standard sizes range up to 12 feet six inches in height with mullion spacings of either three feet six inches or four feet. **E. K. Geyser Co., 915 McArdle Roadway, Pittsburgh 3, Pa.**

For more details circle #634 on mailing card.

Northeastern University's New Physical Education Center, Boston, Massachusetts; construction includes sound conditioning installation of Acousti-Celotex Standard Perforated Mineral Fiber Tile. **Acousti-Celotex Contractor:** Pitcher & Company, Inc.

QUIET Wins Over Noise for University

Cheering crowds and spirited game activity make the athletic building one of the noisiest on the campus . . . and a prime prospect for noise control. Many hundreds of colleges and universities are finding the effective answer to this noise problem in Acousti-Celotex Sound Conditioning. They also find that a sound-absorbing ceiling of Acousti-Celotex Tile provides a quiet atmosphere for classrooms, corridors, lecture halls, study rooms, auditoriums, cafeterias. The improved acoustics help facilitate the processes of both learning and teaching. **Mail Coupon Today** for a *free analysis* of the noise problem in your school, plus free booklet.

TRADE MARK

ACOUSTI-CELOTEX
REGISTERED U. S. PAT. OFF.

Sound Conditioning

Products to Meet Every Sound Conditioning Problem . . . Every Building Code—The Celotex Corporation, 120 S. LaSalle St., Chicago 3, Illinois • **In Canada:** Dominion Sound Equipments, Ltd., Montreal, Quebec

MAIL NOW!

The Celotex Corporation, Dept. T-27
120 South La Salle Street, Chicago 3, Illinois

Without cost or obligation, please send me the Acousti-Celotex Sound Conditioning Survey Chart and your booklet, "Sound Conditioning for Schools and Colleges."

Name_____ Title_____

Institution_____

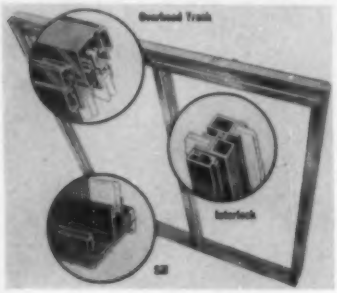
Address_____

City_____ Zone_____ State_____

What's New . . .

Sliding Glass Door for Any Weather

Engineered especially to give protection against any extreme of climate, the



new Fleetlite aluminum sliding glass door will accommodate plate glass or standard or full inch Thermopane or Twindow insulating glass. The interlocking weatherstrip design and cushioning action create a positive seal when the door is closed, checking northern winds and snow and preventing air, water or wind-blown dirt and dust infiltration. The special design eliminates dirt traps, thus reducing maintenance and cleaning chores.

The special overhead suspension assures silent, easy operation and effective door sill weatherproofing. The new door is practical and functional and can be installed in practically any type of construction. It provides freedom and flexibility of design for schools, hospitals and other institutions. **Fleet of America, Inc., 2015 Walden Ave., Buffalo 25, N.Y.**

For more details circle #635 on mailing card.

Tecfab Building Panels for Modern Construction

The result of ten years of research and development, Tecfab Panels of lightweight masonry composition are new in design, use and economy. Consisting of a corrugated steel core embedded in precast perlite concrete, the Tecfab Panel can be used for complete wall, interior partition, floor and roof systems. It is quickly erected and features low initial, installation and maintenance costs.

Practically any color and texture of exposed aggregate can be produced for the exterior face of the panels. The surface can be alternately finished with corrosion-proof metal or any other desired material. The interior face of smooth white perlite concrete can be left with the natural finish or painted. The panels are four inches thick, have high strength exterior concrete, are easily handled and available in virtually any size or shape desired. Tecfab is an advanced, versatile, precast wall paneling system for all modern construction. **Tecfab, Inc., Beltsville, Md.**

For more details circle #636 on mailing card.

(Continued on page 88)

Single-Unit Convenience in Study Top Desk

Model 789 Study Top Desk is designed for pupil convenience with the large sturdy steel book box which is easily accessible by finger-tip control of the lift-lid. Books, papers and accessories will not fall out of the completely enclosed box. There is also a three inch front-to-back adjustment between the book box and the top which has ample working area.

Desk tops are available in heavy hardwood plywood or in plastic. Seat and

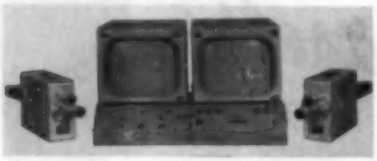
chair back are constructed of curved plywood. The heavy-gauge tubular steel frames are available in five metal finishes. **Griggs Equipment, Inc., Box 630, Belton, Tex.**

For more details circle #637 on mailing card.

What's New . . .

Low-Cost TV Circuit for Instructional Activities

Model 103 Closed-Circuit Utility Chain Package is a low-cost television unit de-



signed for instructional activities. The system centers around a new 103-A camera designed for functional control from a monitor position, giving a complete television unit at minimum cost. The system includes two cameras, camera control unit and remote control panel, illustrated, as well as sync generator, film and slide projectors, multi-plexer, cables and other facilities. **Dage Television Division, Thompson Products, Inc., Michigan City, Ind.**

For more details circle #638 on mailing card.

Folding Tables Feature Functional Leg Designs

Two new leg designs have been introduced to the Barricks line of folding tables. The Deluxe Series features the pedestal V-Leg which allows even persons seated at the extreme end to sit comfortably as the V is close to the center and the tubular steel base is flush with the floor. The Standard Series uses the Spread-Leg design in which both legs taper outward for extra strength and stability.

Both series have the patented automatic LegLock which allows the table legs to be locked firmly into position yet folded up quickly with a simple one-hand motion. The tables are sturdily built with steel center construction and welded tubular steel legs. Tops are finished with Duron, Weytex, Formica or Pionite plastic or plywood. **Barricks Mfg. Co., 134 W. 54th St., Chicago 9.**

For more details circle #639 on mailing card.

Sound Reenforcement System for Acoustic Difficulties

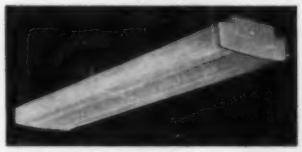
Previously unanswered acoustic difficulties in reverberant auditoriums as well as out of doors are said to be answered with a new acoustic correction and reenforcement system based on the use of line source speaker columns. Technical experimentations in England resulted in the new system. The heart of the system is the line source speaker column which directs a flat, fan-shaped beam, characteristic of the fog-lamp, to concentrate 95 per cent of acoustic output in the audience area. Thus only five per cent of the sound leaks upward to the reverberant portions of the auditorium. The sharp, narrow sound beam eliminates echoes, resulting in clear projection of voices and music. **John Ould, Ltd., U.S.A., 519 S. Fifth Ave., Mt. Vernon, N.Y.**

For more details circle #640 on mailing card.

Lightweight Luminaire for Indoor Lighting

A twin-tube, ceiling-attached luminaire offering superior light control is available in the new Realite. It has a new type total prismatic enclosure known as Prismalume. Prismalume is a precisely molded element which controls light in all directions and provides a high level of downward light and an indirect component along the ceiling, while eliminating all glare from the direct viewing zone.

Realite is a versatile unit designed to integrate with most modern architecture. It accommodates two fluorescent lamps in each four foot length. Units can be



ganged together to form continuous runs without transverse supports. It can be installed directly on the ceiling or with pendent hangers. **Holophone Company, Inc., 342 Madison Ave., New York 17.**

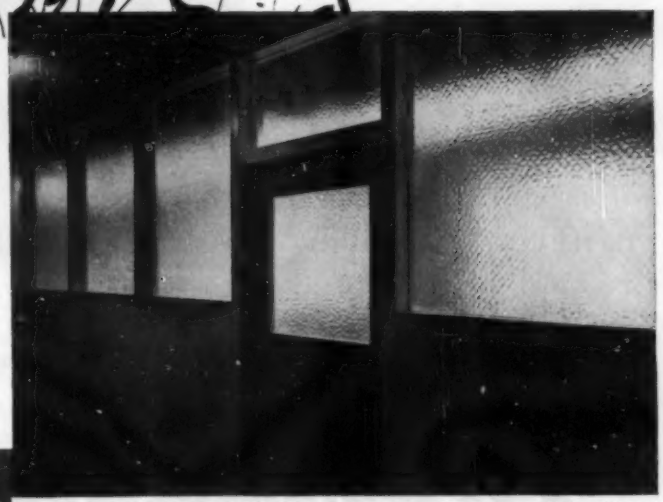
For more details circle #641 on mailing card.

(Continued on page 90)

Beauty on Duty

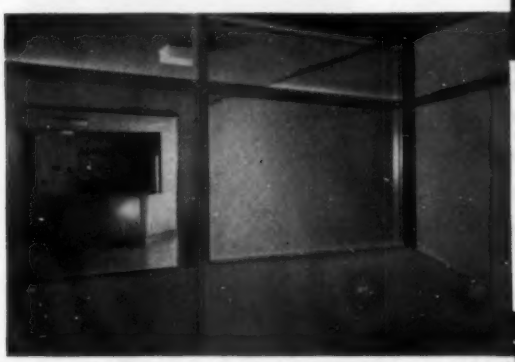
California County Hospital Brightens Interiors with 6000 Square Feet of Mississippi Glass

Extensive use of rolled glass in partitions, doors, and windows gives this new San Mateo County Hospital a bright, cheerful atmosphere . . . creates a pleasant environment for staff, patients and visitors. The extreme practicality of glass partitions as well as their unexcelled beauty recommended their installation. The diffusing glass floods rooms and corridors with softened "borrowed light," yet protects privacy. And maintenance is so simple . . . the glass wipes shining "hospital clean" with a damp cloth, never requires repainting.



Privacy plus protection against breakage or fire is achieved with this installation of Smooth Rough Misco Wire Glass. Misco, approved Fire Retardant No. 32, tends to help battle up fires.

Architects: Stone, Mulloy, Marraccini & Patterson, San Francisco
Glass and glazing by: San Francisco Glass Company



Clear Polished Misco provides maximum protection with undistorted view. This is widely preferred for windows, doors, skylights.

Structural Corrugated Glass is translucent without being transparent, brightens both rooms and halls with "borrowed light".

When you build or remodel consider the many benefits that only glass can offer you in partitions, doors, windows, skylights. Specify Mississippi Glass. Available everywhere in a wide variety of patterns and surface finishes for every daylighting requirement.

Send for free catalog. Address Dept. 27.

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88 Angelica St. • St. Louis 7, Mo.
NEW YORK • CHICAGO • FULLERTON, CALIFORNIA

WORLD'S LARGEST MANUFACTURER OF ROLLED, FIGURED AND WIRED GLASS

What's New . . .

Metal-Clad China Now Offered by Hall

Hall China Company is now handling the line of Metal-Clad China by Plate-

craft. The ware has a lustrous stain-proof metal plating which is hermetically sealed to the outer surface of the china by a secret Swedish process. It has taste purity plus strength and is constructed to guard against chipping. Hall Metal-Clad ware does not stain or tarnish and requires no polishing or replating. Craze-proof Hall China forms the inside of the ware and will not pit or corrode.

The Hall China Metal-Clad by Plate-craft units include several styles of tea-pots, coffee pots, jugs, sugars, creamers, petite marmites and casseroles. They offer not only strength but attractive appearance for tray or table service. **The Hall China Co., East Liverpool, Ohio.**

For more details circle #642 on mailing card.

Portable Water Carrier Rolls onto Athletic Field

Athletes can refresh themselves quickly and in a sanitary manner with the new Behrens Portable Water Caddy. The unit consists of a five-gallon stainless steel tank mounted on semi-pneumatic rubber tired wheels with two push-button fountains which deliver iced water under a steady pressurized flow. A sturdy tubular steel hand rail and long pulling handle

facilitate delivery of the Water Caddy across the field to the players. The model is completely sanitary, dustproof and easy to clean and fill. **Behrens Mfg. Co., Inc., Waukesha, Wis.**

For more details circle #643 on mailing card.

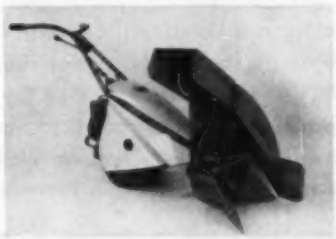
Electric Typewriter Has "Half Moon" Keys

Among the improved features on the new model Underwood "Golden Touch" electric typewriter are the half moon keys designed to protect finger nails. Reduced typing effort, due to the new cushioning device, is another feature of the new models. The "Golden Touch" Electric Typewriters have keyboard margin setting, multi-carbon dial, electric ribbon rewind and automatic carriage return. **Underwood Corp., 1 Park Ave., New York 16.**

For more details circle #644 on mailing card.

Lawn Maintenance Unit Has Snowthrower

The Jari Junior power unit with Snow-thrower attachment handles up to 300 shovelfuls of snow per minute by throwing the snow in one direction. A special raker bar cuts up packed snow into small pieces which can also be easily thrown aside. The attachment can be used



through drifts up to 18 inches and deeper.

The snowthrower attachment is easily removed and replaced by a lawnmower, power sprayer, sickle bar mower and tiller-cultivator. The power unit features an aluminum 1.75 h.p. engine, adjustable handlebars and clutch control rod which provides positive forward drive. **Jari Products, Inc., 2990 Pillsbury Ave. S., Minneapolis 8, Minn.**

For more details circle #645 on mailing card.

Cleaner for Stainless Steel Leaves Stain Resistant Coating

Spots, finger prints and stains are easily removed from stainless steel and Monel with Lac-O-Nu Metal Cleaner. At the same time it leaves a clean, hard, stain-resistant finish which is readily cleaned by wiping with a clean cloth or one dampened with Lac-O-Nu. The new solvent cleaner can also be used to remove stains and spots from plastic and leatherette without damage to the color or finish, according to the report. The product was developed by the Research Laboratories of Armco Steel Corporation.

For heavy duty cleaning Nu-Steel No. A-150 is said to remove lime stains from dishwashers and coffee urns and heat tints and carbonized areas on stainless steel. **United States Pumice Supply Co., Inc., 6331 Hollywood Blvd., Los Angeles 28, Calif.**

For more details circle #646 on mailing card.

What's New . . .

Two Serving Platters in Double-Tough Dinnerware

Two new serving platters have been added to the line of Corning Double-Tough Dinnerware. The platters measure 9½ and 11½ inches in outside diameter and are available in green and maroon band trim and with gray, coral, autumn and aqua sprayed borders. This brings the line of Corning tempered, heat-resistant dinnerware to 24 pieces. **Corning Glass Works, Corning, N.Y.**

For more details circle #647 on mailing card.

Thermo-Fax Machine Copies Books and Papers

One of the new models of the Thermo-Fax copying machines is designed to copy material from books, magazines, newspapers and other bulky units, as well as any other printed, written or typed material. The "Premier" machine has an 8 by 14 inch copy area. Copy paper is placed on the machine, then the

book or other material to be copied is placed face down on top, the cover is lowered and a button pushed. When the copying cycle is completed, the light shuts off and the cover is raised automatically. The book, or other material, is removed and the copy is ready for immediate use. **Minnesota Mining & Mfg. Co., 900 Fauquier Ave., St. Paul 6, Minn.**

For more details circle #648 on mailing card.

Semi-Private Offices With Divider Partitions

Hauserman Divider Wall partitions create semi-private offices from open floor space in quick installation time. Of precision steel and 24 inch glass construction, the divider walls are available in two types: unglazed at a height of 43 inches from the floor, including legs; and glazed, 66 inches from the floor. There is a four inch space between the bottom of all panels and the floor.

Other features of the partitions include snap-in attachment of panels, leveling device for uneven floors, concealed wiring channels, baked enamel finish and plastic glazing strips for inserting and removing glass panels without danger of chipping or breakage. **The E. F. Hauserman Co., 6800 Grant Ave., Cleveland 5, Ohio.**

For more details circle #649 on mailing card.

(Continued on page 92)

Floor Machines for Heavy Duty Maintenance

The Tornado Series 90 heavy duty floor machines includes 14, 16 and 18-inch brush sizes to fill the individual need of any institution for heavy duty floor care. The series responds under the heaviest loads for scrubbing, stripping, polishing, steel wooling, sanding and terrazzo grinding. Features of the new machines include dual switch controls at the handle, under-handle cable connection and self-retracting, non-mark-

ing neoprene wheels and vinyl bumpers around the edge of the housing to prevent scuffing of equipment. **Breuer Electric Mfg. Co., 5100 N. Ravenswood Ave., Chicago 40.**

For more details circle #650 on mailing card.

Garbage Disposers in Heavy-Duty Models

Two new heavy duty models have been added to the line of Waste King

commercial garbage disposers. The HV, powered by a 1½ h.p. motor, has a grinding capacity of 1000 pounds per hour, for handling waste from large institutions. The HD is a ¾ h.p. unit designed to handle 575 pounds per hour. The new additions complete the Waste King line, making available units with grinder capacities ranging from 200 to 2000 pounds of food waste per hour.

Technical improvements in the two new models have been incorporated into the entire line of Waste King disposers. These include improved cone spray, redesigned overhead spray with squeeze-valve water control and a removable silverware trap. **Waste King Corp., 3301 Fruitland, Los Angeles 58, Calif.**

For more details circle #651 on mailing card.

What's New . . .

Audio Visual Unit for Daylight Film Showing

The Cine Educator is a complete audio visual unit with 16 mm projector, built-in

screen, built-in speaker and storage space for reels, films and other equipment. The big 16 by 23 inch rear projection screen provides a bright sharp picture in any lighted room. The unit is mounted on heavy duty casters and can be easily moved for use in any classroom.

Operating controls are mounted on the top exterior part of the Cine Educator cabinet, enabling the instructor to stand in front of the class and point out important parts of the picture with full command of controls. The Cine Educator is 59 inches high, 29¼ inches wide and 38 inches long, permitting easy access through a 30 inch door. **Busch Film and Equipment Co., Saginaw, Mich.**

For more details circle #652 on mailing card.

Conolite Chalkboard Has Excellent Writing Surface

Extensive tests in research laboratories as well as in classrooms indicate that the new Conolite Chalkboard has the performance characteristics of blackboard combined with low cost. Abrasion resistance, ease of application and stain resistance of Conolite polyester laminate are some of the qualities which give the chalkboard its excellent writing surface.

Conolite Chalkboard is flexible and comes in 30 foot rolls, 36 inches wide. It erases clean with no visible scratch lines, and red, black and yellow wax crayon, pencil and ball point pen as well as chalk marks are readily washed off. The new chalkboard is made in standard green color. **Conolite Division, Continental Can Co., 205 W. 14th St., Wilmington 99, Del.**

For more details circle #653 on mailing card.

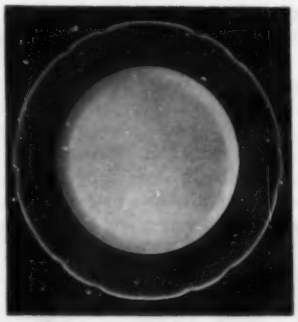
Whole Milk Powder Dissolves Instantly

Snowflake whole milk powder dissolves instantly in hot water for immediate use or may be chilled for drinking. The reconstituted product tastes and cooks like fresh homogenized milk. Snowflake is available in four pound cans which will make 16 quarts of whole fluid milk. **Webster Van Winkle Corp., 99 Summit Ave., Summit, N. J.**

For more details circle #654 on mailing card.

Puritan China Has Wide Scalloped Edge

The new Puritan shape in Walker China is fundamentally traditional in styling. The wide rim has an attractively scalloped edge which adds distinction to traditional or modern settings. The Puritan shape can be decorated with a



choice of colorful designs, or with a solid rim, as illustrated, to suit the decor of the institution. **The Walker China Co., Bedford, Ohio.**

For more details circle #655 on mailing card.

(Continued on page 94)

What's New . . .

Tray Dispenser Is Mobile Unit

The new AMF Lowerator Dispenser for trays is a mobile floor type unit of

all stainless steel construction. Proper alignment of the tray stack is maintained by two guides which also prevent trays from shifting when the unit is being wheeled about.

Up to 150 trays can be placed and stored and dispensed at service level in the new mobile unit. The Lowerator Tray Dispenser has a push-pull handle and all-swivel, rubber tired casters for easy handling to and from loading areas. **American Machine & Foundry Co., 261 Madison Ave., New York 16.**

For more details circle #656 on mailing card.

Immediate Production of Transparency Film

A positive transparency film, which is ready for projection within minutes after the picture is taken, is now available. The film can be produced without special training and is effective for projection to a large audience. It is so sensitive that daylight pictures can be taken indoors without auxiliary lighting, yet revealing sharpness and brilliance when projected.

For audio-visual application, instructors can photograph maps, diagrams, documents and other material for immediate projection and can copy printed material for filing. The new transparency film is called Polaroid-Lord Projection Film. **The Polaroid Corp., 730 Main St., Cambridge 39, Mass.**

For more details circle #657 on mailing card.

Wet-Dry Vacuum of Heavy-Duty Construction

Premier features heavy-duty construction for long-life in its new Model P-905 Master-Vac. The rugged steel tank finished in baked enamel holds 10 gallons liquid or one bushel dry dirt. The Master-Vac is 32¼ inches high, 21½ inches in diameter weighing 38 pounds. A complete line of accessories is available. **Premier Co., 755 Woodlawn Ave., St. Paul 1, Minn.**

For more details circle #658 on mailing card.

(Continued on page 96)

Volume Control in Showermaster Unit

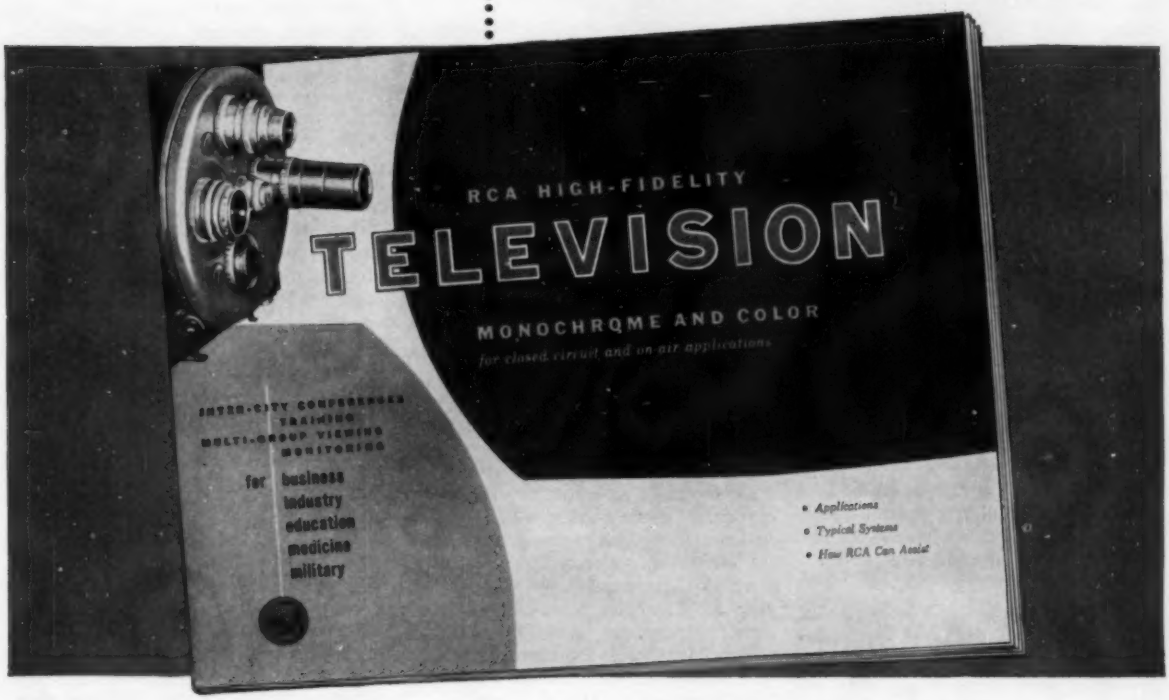
The new Showermaster Control unit has a built-in volume control and shutoff. Encased in a modern chrome panel, it is a complete, self-contained thermostatic control for individual showers. The built-in volume control saves water and the bi-metal Dura-trol thermostat automatically compensates for temperature and pressure changes in either the hot or cold water supply, ensuring against sudden changes. Safety stops limit the hot water temperature to 115 degrees F. maximum and selection of the desired volume will not affect temperatures.

The Showermaster has only one moving part, which is self-cleaning, making is simple to install and maintain. **Leonard Valve Co., Cranston 7, R.I.**

For more details circle #659 on mailing card.

FREE Booklet:

Describes the use of Closed Circuit Television



Some of the Educational Topics:

- Multi-Class Teaching
- Helping Teachers Get Better Results
- Equipment for TV Teaching Systems
- Educational Television Stations

(Two successful educational Stations are described)

Some of the Medical Topics:

- TV for Medical Training and Education
- TV for Research, Dentistry and Surgery
- TV Microscopy
- Inter-Hospital Hook-Ups.

(The use of Television in a large medical center is described)

. . . In Education
. . . In Medicine

Learn how RCA's specialized experience can be of assistance to you in planning television for specific applications . . . how RCA's extensive Systems Planning Department is available to integrate a wide variety of equipment into an installation that will suit your special requirements. Systems and equipment—both color and monochrome—are explained and illustrated, with diagrams and photographs. Mail coupon for your copy.

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What's New . . .

Literature and Services

• Why the FMC Jet Disposer and Utensil Washer are practical for institutional kitchens is told in **Bulletin KB565, "Cost Savers for Every Busy Kitchen."** Construction diagrams and installation data are also included in this informative leaflet offered by Food Machinery & Chemical Corp., Kitchen Equipment Dept., 103 E. Maple St., Hoopeston, Ill.
For more details circle #660 on mailing card.

• How **GPL ii-TV** is applicable for observation, magnification, instruction and control in institutional and industrial situations is told in a new brochure released by General Precision Laboratory, 63 Bedford Rd., Pleasantville, N.Y. The leaflet discusses the four basic camera units for indoor and outdoor use, control and switch units and monitors and illustrates typical applications.
For more details circle #661 on mailing card.

• **Mechanical folding, portable and permanent bleachers** manufactured by Berlin Chapman Co., Bleacher Div., Berlin, Wis. are the subject of a new catalog. Information on chair stands, studio seating and backstops are also included, along with full construction details and specifications of all equipment.
For more details circle #662 on mailing card.

• The new "Trophy" line of swimming pool equipment is described in **Catalog 803** released by Elgin Softener Corp., Swimming Pool Div., Elgin, Ill. Divided into four sections for easy reference, the manual discusses fittings installed in pool walls and floors, water purification equipment, deck equipment and engineering data.
For more details circle #663 on mailing card.

• The advantages of three methods of hot water perimeter piping systems for classroom unit ventilators are cleverly told by color and cartoons in **Form 600-A9.** Prepared by American Air Filter Co., Louisville 8, Ky., the booklet shows how each method successfully fills any individual requirement.
For more details circle #664 on mailing card.

• **"Step Lively and Lose Weight"** is the title of a new folder available from The American Dietetic Assn., 620 N. Michigan Ave., Chicago 11. Low-calorie meal patterns, suggested amounts of various foods to be used and a sample 1200 to 1800 calories per day menu is included.
For more details circle #665 on mailing card.

• **Monarch Panic Exit Devices** are the subject of a new catalog prepared by Monarch Hardware and Mfg. Co., P.O. Box 43, LaGrange, Ky. Illustrations accompany the description of exit devices for single and double doors. To facilitate installation, the catalog features large-size, foldout installation templates with dimensions and instructions clearly indicated.
For more details circle #666 on mailing card.

• **Page Aluminized Fence** is featured in **Bulletin DH-16** which also includes a discussion on Page link fence and barbed wire. Prepared by Page Steel and Wire Div., American Chain & Cable Co., Inc., Monessen, Pa., the brochure illustrates the numerous applications and styles of aluminized fence.
For more details circle #667 on mailing card.

• The new Mohawk series of shallow fluorescent fixtures is described in a six-page brochure, **"Sylvania Presents the Mohawk."** The catalog pages prepared by Sylvania Electric Products Inc., 48th St., Wheeling, W. Va., contain general information and technical specifications on the line which was especially designed for low ceilings.
For more details circle #668 on mailing card.

• A new development is offered in a set of **recordings of highlights of the 1956 political campaign.** The recordings were prepared by a group of students and faculty members at Yale University with the assistance of the Yale Audio-Visual Aid Department, produced by the custom record department of RCA-Victor. They were made in an effort to capture the excitement of the conventions, reflect the trends of a modern campaign, and show the effects of polls and public opinion upon the speeches of the leaders. Material for inclusion was selected on a completely non-partisan basis. The recordings will be distributed by Campaign Fifty-Six, Sounds of An Election Year, 1779 Yale Station, New Haven, Conn.
For more details circle #669 on mailing card.

• **"America's Most Complete Line of Folding Furniture"** is the title of a colorful catalog released by Durham Mfg. Corp., Muncie, Ind. The booklet features round table sets, juvenile furniture, card tables and folding chairs and shows new fabrics, color combinations and improved design details.
For more details circle #670 on mailing card.

• A report on **Soviet Russia today** is presented in a paper bound book published by the National Cash Register Co., Dayton 9, Ohio. Profusely illustrated with photographs in color and black and white, the booklet tells the story of a recent tour of the Soviet Union. The informative publication presents interesting material on the Russian people, their cities, their living standard, their culture and religion, their stores and other subjects, as seen by an American businessman on a visit to the Soviet Union.
For more details circle #671 on mailing card.

• A 12-page brochure, **Edition 43,** on **"Ellison the Balanced Door"** is available from Ellison Bronze Co., Inc., Jamestown, N.Y. The simple door control mechanism is described and design possibilities are suggested through the use of photographs of installations.
For more details circle #672 on mailing card.

• Complete specifications on the new line of **"All-Metal Commercial Refrigerators and Freezers"** manufactured by Victory Metal Mfg. Corp., Plymouth Meeting, Pa., are given in a new brochure recently released. The new line features interchangeable interiors with increased usable space and includes reach-in refrigerators, freezers, blood banks, biological or pharmaceutical, milk formula and other specially-designed refrigerators.
For more details circle #673 on mailing card.

• A catalog of effective tools for promoting better health is offered by the Cleveland Health Museum, 8911 Euclid Ave., Cleveland 6, Ohio, with the title **"How to Make Health Visible."** The 36-page booklet presents information on exhibit material on Human Biology, Dickinson-Belskie Collection of teaching models, Nutrition, School Health, Medicine and Public Health, and lists loan services and publications. Also available through the Museum is a $500 scholarship for any qualified graduate student interested in "school health education, visual methods in health education and educational work in museums."
For more details circle #674 on mailing card.

Suppliers' News

Hillyard Chemical Co., St. Joseph, Mo., manufacturer of floor treatment and floor maintenance products, announces the opening of a new six-story **Hillyard office building** in St. Joseph, Mo. Dedication of the new building will coincide with the company's 50th anniversary celebration during January.

Meterflo Dispensers, formerly of **627 Grove St., Evanston, Ill.,** manufacturer of a complete line of stainless steel cabinet dispensers, floor and counter models for the automatic portion controlled delivery of bulk milk, fruit juices and other refrigerated liquids, announces the opening of new offices and company headquarters at **2534 S. 11th St., Niles, Mich.**

Radio Corporation of America, 30 Rockefeller Plaza, New York 20, announces the establishment of a **Technical Research Service** to provide users of electron microscopes with qualified assistance in the solution of medical, biological and industrial microscopy problems. John J. Kelsch is scientist in charge of the new service.

Syracuse China Corporation, Division of Onondaga Pottery Co., 1858 W. Fayette St., Syracuse 4, N.Y., is the new name style for this manufacturer of Syracuse China. The change has been made to avoid confusion in the use of the brand name of Syracuse China which has been produced by Onondaga Pottery Company for more than sixty years.

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FOLD THIS FLAP OUT
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The two cards below are detachable and are addressed to us. With this flap folded out you can turn through the magazine for the items on which you want further information.

When, in either an advertisement or "What's New" you locate the product, turn to the index to advertisements on the preceding page or to the index of "What's New" items (right) where you will find the key number for the item. Items advertised are listed alphabetically by manufacturer. "What's New" items are in Key Number order. Circle the corresponding key number on the card below for each item in which you are interested. The second card is for the use of someone else who may also want product data.

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CHICAGO, ILL.
PERMIT NO. 136
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BUSINESS REPLY CARD
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PRODUCT INFORMATION

Index to Products Advertised

INDEX TO "WHAT'S NEW" ON FOLLOWING PAGE →

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February, 1957

Please ask the manufacturers, indicated by the numbers I have circled, to send further literature and information provided there is no charge or obligation.

WHAT'S NEW					
616	617	618	619	620	621
622	623	624	625	626	627
628	629	630	631	632	633
634	635	636	637	638	639
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